PRELIMINARY DRAFT:

PROPOSED CHANGES TO

APPLIANCE EFFICIENCY REGULATIONS FOR

(a) REFRIGERATORS, REFRIGERATOR-FREEZERS AND FREEZERS

(b) ROOM AIR CONDITIONERS

(c) CENTRAL AIR CONDITIONERS

(d) SPOT AIR CONDITIONERS

(e) GAS SPACE HEATERS

(f) WATER HEATERS

~~(k)~~ (g) POOL HEATERS

~~(g)~~ (h) PLUMBING FITTINGS

(i) PLUMBING FIXTURES

~~(h)~~ (j) FLUORESCENT LAMP BALLASTS

~~(i) LUMINAIRES~~

(k) LAMPS

(l) DISHWASHERS

(m) CLOTHES WASHERS

(n) CLOTHES DRYERS

(o) KITCHEN RANGES AND OVENS

(p) TELEVISION SETS

(q) ELECTRIC MOTORS

(r) LIGHTING CONTROL DEVICES

(s) DEMAND VENTILATION CONTROL DEVICES

California Code of Regulations

Title 20, Sections 1601 – 1608

AND CORRESPONDING CHANGES TO BUILDING STANDARDS IN TITLE 24, PART 6, SECTIONS 110-119

California Energy Commission Staff

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TITLE 20 APPLIANCE EFFICIENCY REGULATIONS

(This Table is not part of the Regulations but is provided here for the convenience of the reader.)

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SUBCHAPTER 4: ENERGY CONSERVATION
ARTICLE 4: APPLIANCE EFFICIENCY REGULATIONS

§ 1601. Scope.

~~The provisions of t~~This article ~~shall apply~~ applies to the ~~testing, certification and enforcement of efficiency standards for the~~ following types of new appliances, if they are sold in California or installed in Title 24 construction, except those sold wholesale in California for final retail sale outside the state and those designed and sold exclusively for use in recreational vehicles and other mobile equipment.

(a) Refrigerators, refrigerator-freezers, and freezers, including but not limited to refrigerated bottled or canned beverage vending machines, which can be operated by alternating current electricity, excluding the following types:

~~(1) those designed expressly for use in recreational vehicles and other mobile equipment;~~

(1) ~~(2)~~ those refrigerators and refrigerator-freezers with total refrigerated volume exceeding 39 cubic feet;

(2) ~~(3)~~ those freezers with total refrigerated volume exceeding ~~30~~ 39 cubic feet;

(3) ~~(4)~~ those designed to be used without doors; and

(4) ~~(5)~~ remote refrigerators, refrigerator-freezers, and freezers~~.; and~~.

~~(6) those refrigerators, refrigerator-freezers and freezers which have been certified to the Commission:~~

~~(A) not to be distributed in commerce for personal use by individuals,~~

~~(B) to comply with the requirements of Standard 1 (1984) or Standard 7 (1990) of the National Sanitation Foundation or Standard CRS-S1-86 of the Commercial Refrigerator Manufacturers Association (1986),~~

~~(C) to have permanently displayed in an accessible place on the appliance a label stating:~~

~~"This model is not a consumer product as defined by federal law and is not designed, distributed, or intended for personal or residential use," and~~

~~(D) to have had its performance specified in the manufacturer's literature, based on the standard, ANSI/ASHRAE 117-1986, Chapter 9.~~

(b) Room air conditioners, room air conditioning heat pumps, packaged terminal air conditioners, and packaged terminal heat pumps ~~excluding the following types: (1) those installed in mobile homes at the time of construction; and (2) those designed expressly for use in recreational vehicles and other mobile equipment~~.

(c) ~~Central air conditioning heat pumps, regardless of capacity, except that requirements for central air conditioning heat pumps with cooling capacity of 135,000 Btu per hour or more apply to heating performance but not cooling performance; and other central air conditioners with a cooling capacity of less than 135,000~~ 240,000 ~~Btu per hour, excluding the following types: (1) those installed in mobile homes at the time of construction; (2) those designed expressly for use in recreational vehicles and other mobile equipment;, and (3) those designed to operate without a fan~~.

Central air conditioners, which are:

(1) unitary air conditioners and heat pumps, except those designed to operate without a fan,

(2) condensing units, and

(3) water chilling packages.

(d) Spot air conditioners.

(e) Vented g~~G~~as and oil space heaters, ~~excluding the following types: (1) gravity type central furnaces; (2) heaters installed in mobile homes at the time of construction; (3) heaters~~ those ~~designed expressly for use in recreational vehicles and other mobile equipment; (4) fan type central furnaces with input rates of 400,000 Btu per hour or more; and (5) infrared heaters, and~~ including but not limited to gas-fired combination space heating and water heating equipment.

Note: See Health and Safety Code section 19881 for restrictions on the sale of unvented gas and oil heaters.

(f) Water heaters~~, excluding the following types: (1) nonstorage type electric water heaters; (2) storage type water heaters installed in mobile homes at the time of construction; and (3) water heaters designed expressly for use in recreational vehicles and other mobile equipment~~.

(g) Gas, oil, electric resistance, and heat pump pool heaters.

~~(g)~~ (h) Plumbing fittings, ~~including~~ which are showerheads, lavatory faucets, ~~sink~~ kitchen faucets, metering faucets, replacement aerators, wash fountains and tub spout diverters.

(i) Plumbing fixtures, which are toilets and urinals.

~~(h)~~ (j) Fluorescent lamp ballasts ~~which have all the following characteristics:~~ designed:

(1) ~~intended~~ to operate at nominal input voltages of 120 or 277 volts;

(2) to operate with an input current frequency of 60 ~~Hz~~ Hertz; and

~~(3) have maximum lamp operating currents greater than 350 milliamperes and less than 500 milliamperes; and~~

~~(4) can be used to operate fluorescent lamp types F40T12 or F96T12 but excluding each of the following types:~~

~~(A) those designated to be used in ambient temperatures of 0°F or less,~~
~~(B) those with power factors less than 0.60,~~
~~(C) those designed for dimming.~~

(3) for use in connection with T5, T8 and T12 lamps.

~~(i) Luminaires with a fluorescent lamp ballast of the type described in Section 1601 (h)(i) as a component.~~

(k) Lamps, which are general service fluorescent lamps and incandescent reflector lamps.

~~(j) The provisions of this article also restrict the sale of the following gas appliances if they are equipped with constant burning pilots:~~

~~(1) fan type central furnaces~~
~~(2) fan type wall furnaces~~
~~(3) cooking appliances~~
~~(4) pool heaters~~

~~(k) The provisions of this article shall not apply to new appliances manufactured in California, but sold outside the state, nor to new appliances sold wholesale in California for final retail sale outside the state. For purposes of these regulations, the sale of a building which contains a new, permanently installed appliance is not considered the sale of a new appliance.~~

(l) Dishwashers that are federally regulated consumer products.

(m) Clothes washers that are federally regulated consumer products.

(n) Clothes dryers that are federally regulated consumer products.

(o) Kitchen ranges and ovens that are federally regulated consumer products.

(p) Television sets that are federally regulated consumer products.

(q) Electric motors, excluding definite purpose motors, special purpose motors and motors exempted by the US Department of Energy under EPAct.

(r) Lighting control devices, which are automatic time switch control devices, occupant-sensing devices, automatic daylighting control devices, lumen maintenance control devices, and interior photocell sensor devices.

(s) Demand Ventilation Control Devices, which are automatic carbon dioxide sensors and automatic volatile organic compound sensors.

~~The following standards are incorporated by reference in section 1601.~~

~~NATIONAL SANITATION FOUNDATION (NSF)~~

~~*Number*~~	~~*Title*~~	~~*Year*~~
~~Standard No. 1~~	~~Soda Fountain and Luncheonette Equipment~~	~~1984~~
~~Standard No. 7~~	~~Food Service Refrigerators and Storage Freezers~~	~~1983~~

~~Copies available from: National Sanitation Foundation~~
~~3475 Plymouth Road~~
~~P.O. Box 1468~~
~~Ann Arbor, MI 48108~~

~~COMMERCIAL REFRIGERATOR MANUFACTURERS ASSOCIATION (CRMA)~~

~~CRS-S1-86 Voluntary Minimum Standard for Retail Food Store Refrigerators 1986~~

~~Copies available from: Commercial Refrigerator Manufacturers Association~~
~~1101 Connecticut Avenue~~
~~Washington DC 20036~~

~~AMERICAN SOCIETY OF HEATING, REFRIGERATION AND AIR-CONDITIONING ENGINEERS (ASHRAE)~~

~~ANSI/ASHRAE 117-1986 Methods of Testing Self-Service Closed Refrigerators for Food Stores 1986~~

~~Copies available from: American Society of Heating, Refrigerating~~
~~and Air-Conditioning Engineers~~
~~1791 Tullie Circle NE~~
~~Atlanta, GA 30329~~

§ 1602 Definitions <u>and Rules of Construction</u>.

<u>Rules of Construction.</u>

(1) Where the context requires, the singular includes the plural and the plural includes the singular.

(2) The use of "and" in a conjunctive provision means that all elements in the provision must be complied with, or must exist in order to make the provision applicable. Where compliance with one or more elements suffices, or where the existence of one or more elements makes the provision applicable, "or" (rather than "and/or") is used.

(3) "Shall" is mandatory and "may" is permissive.

Definitions. ~~For the purpose of~~ In this article the following definitions ~~shall~~ apply:

(a) General.

(1) "AHAM" means the Association of Home Appliance Manufacturers.

~~(2)~~ "ANSI" means the American National Standards Institute.

~~(3)~~ "ARI" means the Air-Conditioning and Refrigeration Institute.

~~(4)~~ "ASHRAE" means the American Society of Heating, Refrigerating and Air-Conditioning Engineers.

~~(5) "BSR" means the Board of Standards Review of ANSI~~

"Certify" means…

~~(6)~~ "CFR" means the Code of Federal Regulations.

"Database" means the database established pursuant to section 1605(d).

~~(8)~~ "Date of sale" means the day when the appliance is physically delivered to the buyer.

"Design standard" means a prescriptive standard, such as a ban on constant burning pilots or a requirement that a lighting control have a particular feature.

"Energy efficiency standard" means a performance standard expressed in numerical form, such as energy factor, energy efficiency ratio or thermal efficiency.

"EPAct" means the Energy Policy Act of 1992, 42 U.S.C. § 6311 et seq.

"Federally-regulated commercial and industrial equipment" means any one or more of the appliances regulated by EPAct, which are small commercial packaged air conditioners, large commercial packaged air conditioning and heating equipment, packaged terminal air conditioners and packaged terminal heat pumps, warm air furnaces and packaged boilers, storage water heaters, instantaneous water heaters, unfired hot water storage tanks, and electric motors.

~~(7)~~" Federally-regulated c~~C~~onsumer product" means an appliance that is regulated by ~~the National Appliance Energy Conservation Act as specified in 42 U.S.C. section 6292~~ NAECA,~~and, as defined there, is any article of a type which in operation consumes, or is designed to consume, energy; and which, to any significant extent, is distributed in commerce for personal use for consumption by individuals; without regard to whether such article or such type is in fact distributed in commerce for personal use or consumption by an individual. Products designed solely for use in recreational vehicles or other mobile equipment are not consumer products~~ which are **{LIST}**.

"GAMA" means the Gas Appliance Manufacturers Association.

"IEEE" means the Institute of Electrical and Electronic Engineers.

~~(9)~~ "Manufacturer" means any person engaged in the original production or assembly of an appliance. For plumbing fittings, "manufacturer" also means a private brand packager or reassembler.

"NAECA" means the National Appliance Energy Conservation Act, 42 U.S.C. § 6291 et seq.

"NEMA" means the National Electrical Manufacturers Association.

~~(10) "Private brand packager" of plumbing fittings means any person or entity that buys plumbing fittings from a manufacturer, packages them using its own brand name, and distributes them for sale using its own brand name.~~

"Non-federally regulated appliance" means an appliance that is within the scope of Section 1601 and that is neither federally-regulated commercial and industrial equipment nor a federally-regulated consumer product.

~~(11) "Reassembler" of plumbing fittings means any person or entity that buys plumbing fittings from a manufacturer, modifies them, and distributes them for sale using its own brand name.~~

"Report" means…

"Title 24 construction" means building construction that is within the scope of Section 100 of Subchapter 1 of Part 6 of Title 24 of the California Code of Regulations and for which a

building permit is required under Section 10-103(d)1 of Article 1 of Part 1 of Title 24 of the California Code of Regulations.

(b) Refrigerators, Refrigerator-Freezers, and Freezers.

~~(1)~~ "Automatic defrost system" means a defrost system in which the defrosting action for all refrigerated surfaces is initiated and terminated automatically.

"Commercial refrigerator" means a refrigerator, refrigerator-freezer, or freezer, that is not a federally-regulated consumer product.

~~(2)~~ "Freezer" means a cabinet designed as a unit for the freezing and storage of food or ice at temperatures of 0^{o}F or below and having a source of refrigeration requiring an energy input.

~~(3)~~ "Manual defrost system" means a defrost system in which the defrosting action for all refrigerated surfaces is initiated manually.

~~(4)~~ "Partial automatic defrost system" means a defrost system in which the defrosting action for the refrigerated surfaces in the refrigerator compartment is initiated and terminated automatically and the defrosting action for the refrigerated surfaces in the freezer is initiated manually.

~~(5)~~ "Refrigerator" means a cabinet designed for the refrigerated storage of food, including but not limited to solid food~~,~~ and wine, beer and other beverages, at temperatures above 32^{o}F, and having a source of refrigeration requiring an energy input. It may include a compartment for the freezing and storage of food at temperatures below 32^{o}F, but does not provide a separate low temperature compartment designed for the freezing and storage of food at temperatures below 8^{o}F.

~~(6)~~ "Refrigerator-freezer" means a cabinet which consists of two or more compartments with at least one of the compartments designed for the refrigerated storage of food~~s~~, including but not limited to solid food and wine, beer and other beverages, at temperatures above 32^{o}F, and with at least one of the compartments designed for the freezing and storage of food or ice at temperatures below 8^{o}F which may be adjusted by the user to a temperature of 0^{o}F or below. The source of refrigeration requires energy input.

~~(7)~~ "Remote refrigerator, refrigerator-freezer, or freezer" means a refrigerator, refrigerator-freezer, or freezer that:

(A) cannot physically be tested using the test method specified in section 1603(a) without modifying the test method;

(B) receives refrigerant fluid from a condensing unit located externally to its cabinet assembly, ~~usually at least a few meters away;~~ and

(C) is capable of being purchased and installed with different types of compressor or condenser, so that its efficiency depends on the type of compressor or condenser applied by the purchaser, installer, or user.

~~(8) "Upright freezer" means a freezer whose access door is at the front of the appliance.~~

"Wine chiller" means a refrigerator designed specifically for the cooling and storage of wine or other beverages.

(c) Air Conditioners.

~~(2)~~ "Central air conditioner" means an air-conditioner which is not a room air conditioner.

~~(3)~~ "Central air-conditioning heat pump" means a central air conditioner which is capable of heating by refrigeration, and which may or may not include a capability for cooling.

~~(4)~~ "Coefficient of performance (COP)" of a heat pump means the ratio of the rate of useful heat output delivered by the complete heat pump unit (exclusive of supplementary heating) to the corresponding rate of energy input, in consistent units and under operating conditions specified in section 1603(b) and (c). British thermal units shall be converted to kilowatt-hours at the rate of 3412 British thermal units per kilowatt-hour.

~~(5)~~ "Cooling capacity" means a measure of the ability of a unit to remove heat from an enclosed space under test conditions specified in section 1603(b) and (c).

~~(6)~~ "Energy efficiency ratio (EER)" means the ratio of the cooling capacity of the air conditioner in British thermal units per hour, to the total electrical input in watts under test conditions specified in section 1603(b) and (c).

"Ground source heat pump" means a heat pump that uses fluid circulated through a subsurface piping loop as a heat source or heat sink.

"Ground water-source heat pump" means one or more factory-made assemblies that normally include an indoor conditioning coil with air-moving means, compressor(s) and refrigerant-to-water heat exchangers including means to provide a heating function and may include a cooling system.

~~(7)~~ "Heating seasonal performance factor (HSPF)" means the total heating output of a central air-conditioning heat pump with cooling capacity less than 65,000 British thermal units per hour in British thermal units during its normal usage period for heating divided by the total electrical energy input in watt-hours during the same period, as determined using the test procedure specified in section 1603(c).

"Integrated part load value (IPLV)" means …

~~(8)~~ "Packaged terminal air conditioner" means a ~~room air conditioner consisting of a factory selected combination of heating and cooling components, assemblies or sections, intended to serve an individual room or zone and constructed in a manner which complies with the definition contained in the standard, ANSI/ARI 310 1985.~~ wall sleeve and a separate unencased combination of heating and cooling assemblies specified by the builder and intended for mounting through the wall. It includes a prime source of refrigeration, separable outdoor louvers, forced ventilation, and heating availability by builder's choice of hot water, steam, or electricity.

"Packaged terminal heat pump" means a packaged terminal air conditioner that utilizes reverse cycle refrigeration as its prime heat source and has supplementary heat source available to builders with the choice of hot water, steam, or electric resistance heat.

~~(9)~~ "Room air conditioner" means a factory encased air conditioner designed as a unit for mounting in a window or through a wall or as a console. It is designed for delivery of conditioned air to an enclosed space without ducts.

~~(10)~~ "Room air-conditioning heat pump" means a room air conditioner, which is capable of heating by refrigeration, and which may or may not include a capability for cooling.

~~(11)~~ "Seasonal energy efficiency ratio (SEER)" means the total cooling output of an air-cooled central air conditioner with cooling capacity less than 65,000 British thermal units per hour in British thermal units during its normal usage period for cooling divided by the total electrical energy input in watt-hours during the same period, as determined using the test procedure specified in section 1603(c).

~~(12)~~ "Single package central air conditioner" means a central air conditioner which is not a split system central air conditioner.

~~(13)~~ "Split system central air conditioner" means a central air conditioner consisting of two or more major components; including a compressor-containing unit, normally installed outside the building, and a non-compressor-containing unit, normally installed within the building.

~~(1)~~ "Unitary air conditioner" means one or more factory made assemblies which include an evaporator or cooling coil and an electrically driven compressor and condenser combination, and may include a heating function.

"Water-source heat pump" means one or more factory-made assemblies which normally include an indoor conditioning coil with air-moving means, compressor(s) and refrigerant-to-water heat exchangers including means to provide both cooling and heating or cooling only function.

(d) Spot Air Conditioners.

"Cooling efficiency ratio" means the efficiency of a spot air conditioner obtained by dividing the sum of the cooling capacity and fan electrical input in British thermal units per hour by the total electrical input in watts.

~~(1)~~ "Spot air conditioner" means an air conditioner that discharges cool air into one zone within a space and discharges rejected heat back into that space where there is no physical boundary separating the discharges.

(e) Gas and Oil Space Heaters.

~~(1)~~ "Annual fuel utilization efficiency" of a space heater means a measure of the percentage of heat from the combustion of gas which is transferred to the space being heated during a year under conditions specified in section 1603.

~~(2)~~ "Boiler" means a space heater which is a self-contained appliance for supplying steam or hot water primarily intended for space heating application.

~~(3)~~ "Central furnace" means a self-contained space heater designed to supply heated air through ducts of more than 10 inches length.

"Combination space heating and water heating equipment" means an appliance designed for both space heating and water heating.

~~(4)~~ "Duct furnace" means a space heater designed to be installed within a duct.

~~(5)~~ "Energy consumption during standby" means the energy consumed by the gas space heater when the main burner is not operating. It does not include energy consumption related to associated cooling equipment. It shall be reported in watts, based on a conversion factor of 3.412 British thermal units per watt-hour.

~~(6) "Fan type heater or furnace" means a space heater that provides for the circulation of heated air at pressures other than atmospheric.~~

~~(7)~~ "Floor furnace" means a self-contained, floor mounted space heater without ducts.

~~(8) "Gravity type heater or furnace" means a space heater which provides for circulation of heated air through the differential densities of the heated air and the nonheated air.~~

"Hot water supply boiler" means a water heater.

~~(9)~~ "Infrared heater" means a space heater which directs a substantial amount of its energy output in the form of infrared energy into the area to be heated.

"Non-packaged boiler" means a boiler that is not a packaged boiler.

"Packaged boiler" means a boiler that is shipped complete with heating equipment, mechanical draft equipment, and automatic controls; usually shipped in one or more sections.

"Radiant coefficient" means a measure of efficiency of an infrared heater, determined by use of the test procedure specified in Section 1603 (e) (3).

~~(10)~~ "Room heater" means a free-standing non-recessed space heater.

~~(11) "Seasonal efficiency" of a space heater means the measure of the percentage of heat from the combustion of gas and from associated electrical equipment which is transferred to the space being heated during the year under conditions specified under 1603.~~

~~(12)~~ "Space heater" means an appliance that supplies heat to a space for the purpose of providing warmth to those objects within the space.

~~(13)~~ "Steady state efficiency" or "thermal efficiency" of a space heater means a measure of the percentage of heat from the combustion of gas which is transferred to the space being heated under steady state conditions specified in section 1603.

~~(14)~~ "Unit heater" means a self-contained fan type heater designed to be installed within the heated space.

"Unvented room heater" means a room heater designed to be installed without a vent.

~~(15)~~ "Wall furnace" means a wall mounted, self-contained space heater without ducts that exceed 10 inches.

(f) Water Heaters.

"Heat pump water heater" means a device using the vapor compression cycle to transfer heat from a low-temperature source to a higher temperature sink for the purpose of heating potable water, including all necessary ancillary equipment fans, blowers, pumps, storage tanks, piping, and controls.

~~(1)~~ "Instantaneous water heater" means a water heater that is not a storage-type water heater or a heat pump water heater.

~~(2)~~ "Large water heater" means a water heater that is not a small water heater.

~~(3) "Mobile home storage type water heater" means a storage type water heater designed expressly for use in mobile homes.~~

~~(4)~~ "Small water heater" means a water heater that is a gas storage water heater with an input of 75,000 Btu per hour or less, an oil storage water heater with an input of 105,000 Btu per hour or less, an electric storage water heater with an input of 12 kilowatts or less, a gas instantaneous

water heater with an input of 200,000 Btu per hour or less, an oil instantaneous water heater with an input of 210,000 Btu per hour or less, an electric instantaneous water heater with an input of 12 kilowatts or less, or a heat pump water heater rated at 24 amps or less.

~~(5)~~ "Standby loss of a storage-type water heater" when expressed as a percent means the ratio of heat lost per hour to the heat content of the stored water above room temperature. "Standby loss of a storage-type water heater" when expressed in watts per square foot means the heat lost per hour, per square foot of tank surface area.

~~(6)~~ "Storage-type water heater" means a water heater that heats and stores water within the appliance at a thermostatically controlled temperature for delivery on demand.

~~(7)~~ "Thermal efficiency" or "recovery efficiency of a water heater means a measure of the percentage of heat from the combustion of gas which is transferred to the water as measured under test conditions specified in section 1603.

~~(8)~~ "Water heater" means an appliance for supplying hot water for purposes other than space heating or pool heating.

~~(k)~~ (g) Pool Heaters.

"Pool heater" means an appliance designed for heating nonpotable water at atmospheric pressure, ~~such as~~ including heating water in swimming pools, ~~therapeutic pools,~~ spas, hot tubs and similar applications.

~~(g)~~ (h) Plumbing Fittings.

~~(1)~~ "Flow rate of a tub spout diverter" means the leakage through the diverter directly into the bathtub when the device is in the diverting position.

~~(2)~~ "Flow restricting mechanism" refers to a means or device to restrict the flow of water.

"Kitchen faucet" means a plumbing fitting designed for discharge into a kitchen sink.

~~(3)~~ "Lavatory faucet" means a plumbing fitting designed for discharge into a lavatory.

~~(4)~~ "Metering faucet" means a faucet which, when turned on, will gradually shut itself off over a period of several seconds. It may or may not be adjustable for cycle duration.

~~(5)~~ "Plumbing fitting" means a ~~device designed to control and/or guide the flow of water into or convey water from a fixture~~ showerhead, lavatory faucet, kitchen faucet, metering faucet, replacement aerator or tub spout diverter.

"Private brand packager" of plumbing fittings means any person that buys plumbing fittings from a manufacturer, packages them using its own brand name, and distributes them for sale using its own brand name.

"Reassembler" of plumbing fittings means any person that buys plumbing fittings from a manufacturer, modifies them, and distributes them for sale using its own brand name.

"Replacement aerator" means an aerator sold as a replacement, separate from the faucet to which it is intended to be attached.

~~(6)~~ "Showerhead" means a device through which water is discharged for a shower bath.

~~(7) "Sink faucet" means a plumbing fitting designed for discharge into a sink. "Sink faucet" does not include utility faucets designed for use with service sinks.~~

~~(8)~~ "Tub spout diverter" means a device to stop the flow of water into a bathtub and to divert it so that the water discharges through a showerhead.

"Wash fountain" means…

(i) Plumbing Fixtures

"Blowout toilet" means a toilet with a blowout type bowl.

"Blowout type bowl" means a nonsiphonic type toilet bowl designed for a blowout action, with integral flushing rim, a trapway at the rear of the bowl, a visible or concealed jet, a wall outlet, and, if wall mounted, a three bolt hole configuration.

"Electromechanical hydraulic toilet" means …

"Flushometer tank" means a flushometer valve that is integrated within an accumulator vessel affixed and adjacent to the fixture inlet so as to cause an effective enlargement of the supply line immediately before the unit.

"Flushometer valve" means a valve that is attached to a pressurized water supply pipe and so designed that when actuated it opens the line for direct flow into the fixture at a rate and predetermined quantity to properly operate the fixture, and then gradually closes in order to provide trap reseal in the fixture and to avoid water hammer. The pipe to which the device is connected is, in itself, of sufficient size that when open shall allow the device to deliver water at a sufficient rate of flow for flushing purposes.

"Gravity tank type toilet" means …

"Toilet" means a plumbing fixture having a water containing receptor which receives liquid and solid body waste through an exposed integral trap into a gravity drainage system.

"Trough-type urinal" means…

"Urinal" means a plumbing fixture that receives only liquid body waste and, on demand, conveys the waste through a trap seal into a gravity drainage system.

(j) ~~(h)~~ Fluorescent Lamp Ballasts.

"Ballast efficacy factor" means the ratio of the relative light output of a ballast, expressed as a percent, to the power input, expressed in watts at the test conditions specified in section 1603(h)(2).

~~(1)~~ "Fluorescent lamp ballast" means a device ~~designed to operate fluorescent lamps by providing a starting voltage and current, and limiting the current during normal operation. "Fluorescent lamp ballasts for F40T12 lamps" means a ballast also having a rapid start circuit which provides power for maintaining hot cathodes independent of the power which provides lamp operating current.~~which is used to start and operate fluorescent lamps by providing a starting voltage and current and limiting the current during normal operation.

~~(2) "Ballast efficacy factor" means the ratio of the relative light output of a ballast, expressed as a percent, to the power input, expressed in watts at the test conditions specified in section 1603(h)(2).~~

~~(3)~~ "F40T12 lamp" means a tubular fluorescent lamp which is a nominal 40 watt lamp, 48" tube length and 1 1/2 inches in diameter~~. These lamps,~~ and conforms to the standard, ANSI C78.1-1978 (R1984).

~~(4)~~ "F96T12 lamp" means a tubular fluorescent lamp which is a nominal 75 watt lamp, 96" tube length and 1 1/2 inches in diameter~~. These lamps,~~ and conforms to the standard, ANSI C78.3-1978 (R1984)..

"F96T12HO lamp" means a tubular fluorescent lamp which is a nominal 110 watt lamp, 96" tube length and 1 1/2 inches in diameter.

~~(5) "Nominal input voltage" means an input voltage within plus 5 percent or minus 5 percent of a specified value.~~

~~(6) "Nominal lamp watts" means the wattage at which a lamp is designed to operate and for which it is therefore rated.~~

~~(7) "Operate" means able to start the same lamp at least 8 times out of 10 with a minimum of one minute between attempts when tested in accordance with the standard, ANSI C82.2-1984 at 100 percent of nominal input voltage.~~

~~(8) "Power input" means the rate of energy consumption in watts of a ballast when tested at rated values to the test conditions specified in section 1603(h)(2).~~

~~(9) "Relative light output" means the test ballast light output divided by a reference ballast light output using the same reference lamp and expressing the value as a percent. These measurements are made at the ballast's rated primary voltage.~~

"T 5 lamp" means a tubular fluorescent lamp 5/8 inches in diameter.

"T 8 lamp" means a tubular fluorescent lamp one inch in diameter.

"T12 lamp" means a tubular fluorescent lamp 1 inches in diameter.

~~(i) Luminaires.~~

~~"Luminaire" means a complete lighting unit consisting of a lamp or lamps together with the parts designed to distribute the light, to position and protect the lamps and to connect the lamps to the power supply.~~

~~(j) "Household cooking gas appliance" means a gas appliance for domestic food preparation, providing at least top or surface cooking, oven cooking, or broiling. "Household cooking gas appliance" includes appliances designed primarily for commercial use but sold for domestic use.~~

(k) Lamps.

"General service fluorescent lamp" means a fluorescent lamp as defined in EPAct.

"Incandescent lamp" means a lamp as defined in EPAct.

(l) Dishwashers.

"Dishwasher" means a cabinet-like appliance which with the aid of water and detergent, washes, rinses, and dries (when a drying process is included) dishware, glassware, eating utensils, and most cooking utensils by chemical, mechanical, or electrical means, and discharges to the plumbing drainage system.

(m) Clothes Washers.

"Automatic clothes washer" means a class of clothes washer which has a control system which is capable of scheduling a preselected combination of operations, such as regulation of water temperature, regulation of the water fill level, and performance of wash, rinse, drain, and spin functions without the need for user intervention subsequent to the initiation of machine operation. Some models may require user intervention to initiate these different segments of the cycle after the machine has begun operation, but they do not require the user to intervene to regulate the water temperature by adjusting the external water faucet valves.

"Clothes washer" means a consumer product designed to clean clothes, utilizing a water solution of soap or detergent and mechanical agitation or other movement, and must be one of the following classes: automatic clothes washers, semi-automatic clothes washers, and other clothes washers.

"Other clothes washer" means a class of clothes washer which is not an automatic or semi-automatic clothes washer.

"Semi-automatic clothes washer" means a class of clothes washer that is the same as an automatic clothes washer except that user intervention is required to regulate the water temperature by adjusting the external water faucet valves.

(n) Clothes Dryers.

"Electric clothes dryer" means a cabinet-like appliance designed to dry fabrics in a tumble-type drum with forced air circulation. The heat source is electricity and the drum and blowers(s) are driven by an electric motor(s).

"Gas clothes dryer" means a cabinet-like appliance designed to dry fabrics in a tumble-type drum with forced air circulation. The heat source is gas and the drum and blower(s) are driven by an electric motor(s).

(o) Kitchen Ranges and Ovens.

"Kitchen ranges and ovens" means consumer products that are used as the major household cooking appliances, that are designed to cook or heat different types of food by gas, electricity, or microwave energy, that consist of a horizontal cooking top containing one or more surface units or one or more heating compartments, and that are conventional ranges, conventional cooking tops, conventional ovens, microwave ovens, microwave/conventional ranges or another kitchen range or oven.

(p) Television Sets.

"Color television set" means an electrical device designed to convert incoming broadcast signals into color television pictures and associated sound.

"Monochrome television set" means an electrical device designed to convert incoming broadcast signals into monochrome television pictures and associated sound.

"Television set" means a color television set or a monochrome television set.

(q) Electric Motors.

"Definite purpose motor" means any motor designed in standard ratings with standard operating characteristics or standard mechanical construction for use under service conditions other than usual or for use on a particular type of application and which cannot be used in most general purpose applications.

"Efficiency" of an electric motor means the ratio of an electric motor's useful power output to its total power input, expressed in percentage.

"Electric motor" means any motor which is a general purpose T-frame, single-speed, foot-mounting, polyphase squirrel-cage induction motor of the National Electrical Manufacturers Association, Design A and B, continuous rated, operating on 230/460 volts and constant 60 Hertz line power as defined in NEMA Standards Publication MG1-1987.

"Enclosed motor" means a motor so enclosed as to prevent the free exchange of air between the inside and outside of the case but not sufficiently enclosed to be termed airtight.

"Nominal full load efficiency" means the average efficiency of a population of motors of duplicate design as determined in accordance with NEMA Standards Publication MG1-1987.

"Open motor" means a motor having ventilating openings which permit passage of external cooling air over and around the windings of the machine.

"Special purpose motor" means any motor, other than a general purpose motor or definite purpose motor, which has special operating characteristics or special mechanical construction, or both, designed for a particular application.

The following standards are incorporated by reference in section 1602.

~~AIR-CONDITIONING AND REFRIGERATION INSTITUTE (ARI)~~

Number	*Title*	~~*Year*~~
~~ANSI/ARI 310-1985~~	~~Standard for Packaged Terminal Air Conditioners~~	~~1985~~
~~Copies available from:~~	~~Air-Conditioning and Refrigeration Institute 1501 Wilson Boulevard Arlington, VA 22209~~	

AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI C78.1-1978 (R1984)	Dimensional and Electrical Characteristics of Fluorescent Lamps, Rapid Start Types	~~1984~~
ANSI C78.3-1978 (R1984)	Dimensional and Electrical Characteristics and Fluorescent Lamps, Instant Start and Cold Cathode Types	~~1984~~
~~ANSI C82.2-1984~~	~~Methods of Measurements for Fluorescent Lamp Ballasts~~	~~1984~~
Copies available from:	National Electric Manufacturers Association 2101 L Street, N.W. Washington, D.C. 20037	

§ 1603. Test Methods.

The manufacturer shall cause the testing of samples of each model of appliance listed in this section, using the applicable test method listed in this section, at a laboratory that has been approved by the Executive Director for the use of that test method. Such a laboratory is one that:

(1) has conducted tests using the test method;

(2) agrees to and does interpret the test method precisely as written;

(3) agrees to and does maintain copies of all test reports, and provides any such report to the Executive Director on request, for all models that are still in commercial production; and

(4) agrees to and does allow a representative of the Commission to witness any test on request.

(a) Refrigerators, Refrigerator-Freezers, and Freezers. The ~~manufacturer shall cause the testing of samples of each model of~~ test methods for refrigerators, refrigerator-freezers, and freezers are shown in Table A-1 ~~to be sold in California~~.

~~Fresh food refrigerated volume, freezer refrigerated volume, total refrigerated volume, energy consumption and energy factor shall be determined using the test procedure for refrigerators and freezers in 10 Code of Federal Regulations (CFR) section 430.22(a) and (b) (1991).~~

When a refrigerator, refrigerator-freezer or freezer can be operated using either alternating current electricity or one or more other sources of primary power, the test shall be performed using alternating current electricity only.

Table A-1

Appliance Type	*Test Procedure*
Federally-regulated consumer products	10 CFR § 430.22(a) and (b)
Wine chillers that are consumer products	10 CFR § 430.22(a)
Freezers > 30 cubic feet that are consumer products	10 CFR § 430.22(b)
Refrigerated bottled or canned beverage vending machines	ANSI/ASHRAE 32.1-1997
Other commercial refrigerators, refrigerator-freezers, and freezers	ANSI/ASHRAE 117-1992[1]

[1] Provided that the controls shall be adjusted to obtain the following product temperatures:

Type	*Initial Product Temperature – ^{o}F*	*Maximum Product Temperature - ^{o}F*
Refrigerator – fresh food	38 plus or minus 1	40
Freezer	0 plus or minus 1	0
Reach-in wine cooler	45 plus or minus 1	No requirement
Ice cream cabinet	-5 plus or minus 1	0

(b) Room Air Conditioners ~~(including Packaged Terminal Units).~~ , Room Air Conditioning Heat Pumps, Packaged Terminal Air Conditioners, and Packaged Terminal Heat Pumps. The ~~manufacturer shall cause the testing of samples of each model of~~ test methods for room air conditioners ~~and room air conditioning heat pump to be sold in California.~~ , room air conditioning heat pumps, packaged terminal air conditioners, and packaged terminal heat pumps are

~~(1) The cooling capacity, heating capacity, electrical input and energy efficiency ratio (EER) of the appliance types listed in Table B-1 shall be determined using one of the test procedures as appropriate,~~ shown in Table B-1.

Table B-1

Appliance Type	~~*Number*~~ *Test Procedure*
Room air conditioners, including room air-conditioning heat pumps, but excluding package terminal air conditioners and heat pumps Packaged terminal air conditioners and heat pumps ~~Packaged terminal heat pumps~~	Room air-conditioner test method in 10 CFR section 430.22(f) ~~(1991)~~ (1999) ~~ARI 310-1987~~ ARI 310/380-93 ~~ARI 380-87~~

~~(2) The thermal efficiency of room air conditioners with heating capability shall be determined by dividing the heating capacity by the electrical input in equivalent units.~~

(c) Central Air Conditioners. (1) The ~~manufacturer shall cause the testing of samples of each model of~~ test methods for central air conditioners ~~and central air-conditioning heat pump to be sold in California~~ are shown in Table C-1. Air-cooled central air conditioners with rated cooling capacity less than 65,000 Btu per hour which are designed for use either at 230 volts ~~and~~ or at other voltage(s) may be tested at 230 volts and the results applied to the other voltages. All ~~other~~ types of central air conditioners which are designed for use either at 208 volts ~~and~~ or at other voltage(s) may be tested at 208 volts and the results applied to the other voltages.

~~(1) The cooling capacity, heating capacity, electrical input, energy efficiency ratio, seasonal energy efficiency ratio, coefficient of performance, and heating seasonal performance factor, as applicable, shall be determined using one of the appropriate test procedures as appropriate, shown in Table C-1.~~

~~Table C-1~~

~~Appliance Type~~	~~Number~~
~~Heat pumps, air source less than 135,000 Btu per hour.~~	~~ARI 240-81~~
~~Heat pumps, water source less than 135,000 Btu per hour.~~	
~~water source~~	~~ARI 320-86~~
~~groundwater source~~	~~ARI 325-85~~
~~Heat pumps, from 135,000 Btu per hour, heating function only.~~	~~ARI 340-86~~
~~Central air conditioners~~	~~ARI 210-81~~
~~Computer room air conditioners~~	~~ASHRAE 127-1988~~

Table C-1

Appliance Type	*Test Procedure*
Unitary air-conditioners, and heat pumps, including computer room air-conditioners	
air cooled or air source	ARI 210 / 240 – 94
< 135,000 Btu / hour	ARI 340 / 360 – 93
= > 135,000 Btu / hour	
water or evaporatively cooled or water source	ANSI/ARI 320-93
<135,000 Btu/hour	STD – 201 (96)
=> 135,000 Btu/hour	ARI 340 / 360 – 93
ground water source	ANSI/ARI 325 – 93
ground source	ARI 330-93
Condensing Units > 135,000 Btu / hour	
air cooled	ARI 365-94
water or evaporatively cooled	ARI 365 – 94 STD – 201 (96)
Water chilling packages	
air cooled	ARI 550 – 92 ARI 590 – 92
water cooled	STD – 201 (96) ARI 550 – 92 ARI 590 –92

~~The standby electrical input of air-cooled central air-conditioning heat pumps with cooling capacity of 65,000 Btu per hour or more, shall be determined by measuring the watt-hours used in a one-hour period, at 75°F plus or minus 10°F ambient conditions, starting from a cold start. The adjusted coefficient of performance shall be calculated as follows:~~

$$\text{Adjusted Coefficient of Performance} = \frac{\text{Rated heating capacity (watts)}}{\text{Rated electrical input (watts)} \div \left| c \times \text{standby electrical input (watts)} \right|}$$

~~Where c = 2.5 for 47°F test and c = 0 for 17°F test.~~

(2) ~~A split~~ Split system central air conditioners and~~, or a~~ compressor-containing ~~unit, may be sold if, and only if, the manufacturer has certified that the compressor-containing unit, when~~ units shall be tested with the non-compressor-containing unit most likely to represent the highest national sales volume for the combined equipment ~~, is in compliance with the provisions of these regulations~~.

(d) Spot Air Conditioners. The ~~manufacturer shall cause the testing of samples of each model of~~ test method for spot air conditioners ~~to be sold in California. The cooling energy ratio (CER) shall be determined using~~ is the standard, ANSI/ASHRAE 128-1989 ~~Method of Rating Spot Air Conditioners~~.

(e) Gas and Oil Space Heaters.

(1) Dual-Fuel Models. Models of gas space heaters intended for use either with natural gas or liquefied petroleum gases may be tested with natural gas and the results applied to both fuel types.

(2) T~~he manufacturer shall cause the testing of samples of each model of~~ test method for gas and oil central warm air furnaces, gas infrared heaters, gas and oil unit heaters and duct furnaces, gas and oil boilers, and gas and oil wall furnaces, floor furnaces, and room heaters are shown in Table E-1. ~~space heater to be sold in California. Models of gas space heaters intended for use either with natural gas or liquefied petroleum gases may be tested with natural gas and the results applied to both fuel types.~~

(1) The seasonal efficiency of gas fan-type central furnaces shall be calculated using the following formula:

$$\text{Seasonal efficiency} = \frac{\text{annual fuel energy consumption (Btu)} \times \text{annual fuel utilization efficiency} \pm \left(\text{annual auxiliary electrical energy consumption which provides heat to heated space (kWh)} \times 3412 \text{ Btu/kWh}\right)}{\text{annual fuel energy consumption (Btu)} \pm \left(\text{total annual auxiliary electrical energy consumption (kWh)} \times 10236 \text{ Btu/kWh}\right)}$$

The steady state efficiency, annual fuel energy consumption, annual auxiliary electrical energy consumption which provides heat to the heated space, total annual auxiliary electrical energy consumption and annual fuel utilization efficiency of gas fan type central furnaces shall be determined using the test procedure for central furnaces in 10 Code of Federal Regulations section 430.22(n) (1991)).

(2) The seasonal efficiency of wall furnaces, floor furnaces and room heaters shall be calculated using the following formula

$$\text{Seasonal Efficiency} = \frac{\left(200 \text{ (hours)} \times \text{rated input (Btu/hour)}\right) + \left(\text{annual fuel utilization efficiency}\right) + \left(200 \text{ (hours)} \times \text{maximum electrical power which provides heat to heated space (watts)} \times 3.412 \text{ (Btu/Wh)}\right) + \left(3560 \text{ (hours)} \times \text{electrical power during standby which provides heat to heated space (watts)} \times 3.412 \text{ (Btu/Wh)}\right)}{\left(200 \text{ (hours)} \times \text{rated input (Btu/hour)}\right) + \left(200 \text{ (hours)} \times \text{maximum electrical power (watts)} \times 10.236 \text{ (Btu/Wh)}\right) + \left(8560 \text{ (hours)} \times \text{electrical power during standby (watts)} \times 10.236 \text{ (Btu/Wh)}\right)}$$

The rated input, annual fuel utilization efficiency, maximum electrical power input and electrical energy used during standby shall be determined using is the test procedure for home heating equipment in 10 Code of Federal Regulations section 430.22(o) (1991) (1999).

(3) Thermal efficiency, annual fuel utilization efficiency, and energy consumption during standby of all other gas space heaters shall be measured using one of the standards in Table E-1.

Table E-1

Effective Date	*Appliance Type*	*Number*
January 1, 1987	Boilers Less than 300,000 Btu/hr 300,000 Btu/hr or more Unit heaters Duct furnaces	- 10 CFR Section 430.22(n) (1991) ANSI Z21.13-1987 ANSI Z83.8-1990 ANSI Z83.9-1986

Table E-1

Appliance Type	*Test Procedure*
Central warm air furnaces < 225,000 Btu/hour => 225,000 Btu/hour gas-fired oil-fired	10 CFR Section 430.22(n)(1999) ANSI Z21.47 – 1987 ANSI/UL 727-86
Infrared heaters	ANSI Z 83.6 – 1990
Unit heaters gas-fired oil-fired Duct furnaces (gas-fired only)	 ANSI Z83.8 – 1990 UL 731-95 ANSI Z 83.9 – 1986
Boilers < 300,000 Btu/hour => 300,000 Btu/hour gas-fired oil-fired	 10 CFR Section 430.22(n)(1999) ANSI Z 21.13 – 1991[a] Hydronics Institute Standard
Wall furnaces, floor furnaces and room heaters	10 CFR Section 430.22(o)(1999)
Combination space-heating/ water-heating appliances	ANSI/ASHRAE 124-1991
[a] Determination of input rate and flue losses shall be in accordance with the provisions of this standard. Combustion efficiency shall be determined by subtracting flue losses from the input rate (without applying any tolerances).	

(f) Water Heaters. ~~The manufacturer shall cause the testing of samples of each model of water heater to be sold in California. Testing of large storage-type water heaters shall be by a laboratory approved by the executive director.~~

(1) Dual-Fuel Models. Models of water heaters intended for use either with natural gas or liquefied petroleum gases may be tested with natural gas and the results applied to both fuel types.

~~(1) A laboratory approved by the Executive Director means one that documents that:~~

~~(A) it has conducted tests using the standard, ANSI Z21.10.3-1990~~

~~(B) it agrees to interpret the test method precisely as written in the standard~~

~~(C) it agrees to maintain copies of test reports for all models which are still in commercial production~~

~~(D) it agrees to allow a representative of the Commission to witness a test for thermal efficiency and standby loss not more than one time per calendar year.~~

(2) The test methods for small water heaters are those shown in Table F-1.

Table F-1

Appliance Type	*Test Procedure*
Federally-regulated small water heaters	10 CFR Section 430.22(e)(1999)
Non-federally-regulated small water heaters storage-type < 20 gallons others	 ANSI/ASHRAE 118.2-1993 10 CFR Section 430.22(e)(1999)

~~(2) The recovery efficiency, standby loss, volume, and energy factor of small water heaters that are consumer products shall be measured using the test procedure for water heaters in 10 Code of Federal Regulations section 430.22(e) (1992).~~

~~(3) The recovery efficiency, standby loss, volume, and energy factor of small storage-type water heaters with volume less than 20 gallons that are not consumer products shall be measured using the standard, BSR/ASHRAE 118.2P (1992).~~

~~(4) The recovery efficiency, standby loss, volume, and energy factor of all other small storage-type water heaters that are not consumer products shall be measured using the test procedure for water heaters in 10 Code of Federal Regulations section 430.22(e)(1992).~~

(~~5~~3) ~~The thermal efficiency, standby loss and volume of large water heaters (where applicable) shall be measured using~~ Large water heaters. The test method for large water heaters is the standard, ANSI Z21.10.3-~~1990~~1993, modified as follows:

~~(A)~~ When testing an electric storage-type water heater for standby loss using the test procedure of Section 2.9 of ANSI Standard Z21.10.3-~~1990~~1993~~:~~,

(i) the electrical supply voltage shall be maintained within ± 1% of the center of the voltage range specified on the water heater nameplate; ~~Also~~,

(ii) when needed for calculations, the thermal efficiency (E_t) shall be 98%.

(B) When testing an oil water heater using the test procedures of Section 2.8 and 2.9 of ANSI Standard Z21.10.3-~~1990~~1993~~, the following modifications shall be made~~:

(i) a vertical length of flue pipe shall be connected to the flue gas outlet of sufficient height to establish the minimum draft specified in the manufacturer's installation instructions~~:~~.

(ii) all measurements of oil consumption shall be taken by instruments with an accuracy of ± 1% or better; and

(iii) the burner rate shall be adjusted to achieve an hourly Btu input rate within ± 2% of the manufacturer's specified input rate with the CO_2 reading as specified by the manufacturer with smoke no greater than 1 and the fuel pump pressure within ± 1% of the manufacturer's specification.

(g) Pool Heaters. The test method for pool heaters is ANSI/ASHRAE 146-1998.

~~(g)~~(h) Plumbing Fittings.

(1) All plumbing fittings. The test method for ~~(1) The manufacturer shall cause the testing of samples of each model of~~ showerheads, lavatory faucets, ~~sink~~ kitchen faucets, metering faucets, replacement aerators, wash fountains, and tub spout diverters ~~to be sold in California by a laboratory approved by the Executive Director. The method of testing shall be~~ is ~~the standard,~~ ANSI/ASME A112.18.1M-~~1989~~1996, with the additional conditions described in subsection (b) for showerheads ~~except that for fitting manufactured on or after March 20, 1992, only one test shall be required for showerheads and faucets and that test shall be performed at a pressure of 60 psi for faucets and 80 psi for showerheads. Two tests shall be required for tub spout diverters: at~~

~~20 psi and 60 psi. A laboratory approved by the Executive Director means one that documents that it has completed tests using the standard ANSI/ASME A112.18.1M-1989.~~

(2) ~~When a flow restricting mechanism is incorporated as a component of a showerhead, it shall be mechanically retained at the point of manufacture. Mechanically retained shall mean that a pushing or pulling force of at least eight pounds is required to remove the insert.~~ Showerheads. Showerheads with ~~the~~ a flow restrict~~or~~sing mechanism that is mechanically retained at the point of manufacture shall be tested with the flow ~~restrictor~~ restricting mechanism in place. Showerheads with a radially drilled hole which is sealed when ~~the~~ a flow restricting mechanism is in position, but which sprays water out of the side of the showerhead when the flow restricting mechanism is removed, shall also be tested with the flow restricting mechanism in place. Other showerheads ~~in which~~ with a flow restricting mechanism that is not mechanically retained at the point of manufacture shall be tested with the flow restricting mechanism removed. Mechanically retained shall mean that a pushing or pulling force of at least eight pounds is required to remove the mechanism.

(i) Plumbing Fixtures. The test method for toilets and urinals is ANSI/ASME A112.19.2M-1990.

~~(h)~~ (j) Fluorescent Lamp Ballasts. The ~~manufacturer shall cause the testing of samples of each model of~~ test method for fluorescent lamp ballasts is ~~to be sold in California of the type described in Subsection 1601(h)~~ the test procedure in 10 Code of Federal Regulations section 430.22(q) 1999.

~~(1) A sample of sufficient size of each model shall be tested to insure that the ballast efficacy factor certified under the provisions of section 1606 shall be no greater than the mean of the sample or the lower 97_ percent confidence limit of the true mean divided by 0.95. A minimum of four ballasts of each model shall be randomly selected and tested at least once a year.~~

~~(2) The power input, and relative light output shall be determined in accordance with the standard, ANSI C82.2-1984.~~

(k) Lamps. The test method for general service fluorescent lamps and incandescent reflector lamps is the test procedure for lamps in 10 Code of Federal Regulations section 439.22(r)(1999).

(l) Dishwashers. The test method for dishwashers is the test procedure for dishwashers in 10 Code of Federal Regulations section 430.22(c) (1999).

(m) Clothes Washers. The test method for clothes washers is the test procedure for clothes washers in 10 Code of Regulations section 430.22(j) (1999).

(n) Clothes Dryers. The test method for clothes dryers is test procedure for clothes dryers in 10 Code of Federal Regulations section 430.22(d) (1999).

(o) Kitchen Ranges and Ovens. The test method for kitchen ranges and ovens is the test procedure for kitchen ranges and ovens in 10 Code of Federal Regulations section 430.22(i) (1999).

(p) Television Sets. The test method for television sets is the test procedure for television sets in 10 Code of Federal Regulations (CFR) section 430.22(h) (1999).

(q) Electric Motors. The test method for electric motors is the test procedure in NEMA Standards Publication MG1-1987 and IEEE Standard 112 Test Method B.

The following documents are incorporated by reference in section 1603.

~~a.~~ FEDERAL TEST METHODS

Code of Federal Regulations, Title 10, section 430.22 ~~(1992)~~ (1999)
~~Code of Federal Regulations, Title 10, section 430.22 (1991).~~

Copies available from: Superintendent of Documents
U.S. Government Printing Office
Washington, D.C. 20402

~~b.~~ AIR-CONDITIONING AND REFRIGERATION INSTITUTE (ARI)

~~*Number*~~	~~*Title*~~	~~*Year*~~
~~ARI 210-81~~ ARI 210/240-94	Standard for Unitary Air-Conditioning and Air-Source Heat Pump Equipment	~~1981~~
~~ARI 240-81~~	~~Standard for Air-Source Unitary Heat Pump Equipment~~	~~1981~~
~~ARI 310-87~~ ARI 310/380-93	~~Standard for Packaged Terminal Air-Conditioners~~ Standard for Packaged Terminal Air-Conditioners and Heat Pumps	~~1987~~
ANSI/ARI 320-86	Standard for Water-Source Heat Pumps	~~1986~~
ARI 330-93	Standard for Ground Source Closed Loop Heat Pumps	
ARI 325-85	Standard for Ground Water-Source Heat Pumps	~~1985~~
ANSI/ARI 340-86	Standard for Commercial and Industrial Unitary Heat Pump Equipment	~~1986~~
~~ARI 380-87~~	~~Standard for Packaged Terminal Heat Pumps~~	~~1987~~

Copies available from: Air-Conditioning and Refrigeration Institute
~~1501 Wilson Boulevard, 6th Floor~~
4301 North Fairfax Drive, Suite 425
Arlington, VA ~~22209-2403~~22203

~~c.~~ AMERICAN SOCIETY OF MECHANICAL ENGINEERS (ASME)

ANSI/ASME A112.18.1M-~~1989~~ 1996	Plumbing Fixture Fittings	~~1989~~
ANSI/ASME A112.19.2M-1990	Vitreous China Plumbing Fixtures	

Copies available from: American Society of Mechanical Engineers
345 East 47th Street
New York, NY 10017

~~d.~~ AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)

ANSI C82.2-1984	Methods of Measurement for Fluorescent Lamp Ballasts	~~1984~~
Copies available from:	National Electrical Manufacturers Association 2101 L Street, N.W. Washington, D.C. 20037	
ANSI Z21.10.3-~~1990~~ 1993	Standard for Gas Water Heaters, Volume III, Storage with Input Ratings Above 75,000 Btu per hour, Circulating and Instantaneous Water Heaters	~~1990~~
ANSI Z21.13-1987	Standard for Gas-Fired Low Pressure Steam and Hot Water Boilers	~~1987~~
ANSI Z83.6-1990	Standard for Gas-Fired Infrared Heaters	
ANSI Z83.8-1990	Standard for Gas Unit Heaters	~~1990~~
~~ANSI Z83.9-1986~~ ANSI Z83.9-1990	Standard for Gas Duct Furnaces	~~1986~~
Copies available from:	American Gas Association ~~1515 Wilson Boulevard~~ ~~Arlington, VA 22209~~ 400 North Capitol Street Washington, DC 20001	

~~c.~~ AMERICAN SOCIETY OF HEATING, REFRIGERATION AND AIR-CONDITIONING ENGINEERS (ASHRAE)

ANSI/ASHRAE 32.1-1997	Methods of Testing for Rating Bottled and Canned Beverage Vending Machines	
ANSI/ASHRAE 117-1992	Methods of Testing Closed Refrigerators	
~~BSR/ASHRAE 118.2P~~ ASHRAE 118.2-1993	Method of Testing for Rating Residential Gas, Electric, and Oil Water Heaters	~~1992~~
~~ANSI/ASHRAE 127-1988~~	~~Method of Rating Computer and Data Processing Room Unitary Air Conditioners~~	~~1988~~
ANSI/ASHRAE 128-1989	Method of Rating Spot Air Conditioners	~~1989~~
ANSI/ASHRAE 146-1998	Method of Testing and Rating Pool Heaters	
Copies available from:	American Society of Heating, Refrigerating and Air-Conditioning Engineers 1791 Tullie Circle NE Atlanta, GA 30329	

NATIONAL ELECTRICAL MANUFACTURERS ASSOCIATION

NEMA MG1-1987	NEMA Standards Publication
Copies available from:	National Electrical Manufacturers Association 2101 L Street, N.W. Washington, DC 20037

INSTITUTE OF ELECTRICAL AND ELECTRONIC ENGINEERS

ANSI/IEEE 112-1992	Test Procedures for Polyphase Induction Machines
Copies available from:	Institute of Electrical and Electronic Engineers 445 Hoes Lane PO Box 1331 Piscataway, NJ 08855-1331

§ 1604. Energy Efficiency and Design Standards; In General.

Section 1604.1 contains standards that are the same as the federal standards contained in or adopted under NAECA or EPAct. They are applicable as federal law to the sale of appliances in California. In addition, they are adopted here as state law and as such are applicable to appliance installation in Title 24 construction.

Section 1604.2 contains standards that are exclusively California standards. They are applicable as state law to both the sale of appliances in California and to appliance installation in Title 24 construction.

Section 1604.3 contains standards that are exclusively California standards. They are applicable as state law only to appliance installation in Title 24 construction.

If more than one standard is shown for an appliance, the appliance shall meet all the standards shown.

If more than one test method is shown as applicable to a standard, the appliance shall comply with the standard when tested with each test method.

If an appliance can serve more than one function, such as both heating and cooling, or both space heating and water heating, it shall comply with all the requirements applicable to each function.

§ 1604.1. Federally-regulated appliances; standards applicable to both sale (federal enforcement) and to Title 24 construction (California enforcement).

These standards are federal law. They are contained in, or adopted in regulations pursuant to, NAECA and EPAct. They are applicable to the distribution of appliances in commerce anywhere in the U.S. and they are enforced by the U.S. Department of Energy. It is illegal under federal law for any appliance within the scope of this section to be sold in the United States unless the appliance complies with the federal standards.

These standards are also adopted here as state law insofar as the appliances they cover are installed in Title 24 construction. As such, they are enforced by the California Energy Commission and local building departments.

No appliance within the scope of this section shall be installed in Title 24 construction unless, pursuant to section 1605, (1) the manufacturer has certified that the appliance complies with the applicable standard shown in this section and (2) the appliance is listed in the database.

In addition, no appliance within the scope of this section shall be sold in California, or installed in Title 24 construction, unless the manufacturer has (1) tested it as required by section 1603, and (2) marked it as required by section 1606.

(a) ~~(1)~~ Refrigerators, Refrigerator-freezers and Freezers.

(1) ~~The~~ Standards. Except as provided in paragraph (2) of this subsection, the energy consumption of ~~all new refrigerators, refrigerator-freezers and freezers manufactured between January 1, 1987 and December 31, 1989 and~~ all ~~new~~ refrigerators, refrigerator-freezers and freezers ~~that are not consumer products and that are manufactured on or after January 1, 1990~~, shall be ~~certified not to exceed~~ not greater than the values shown in Table ~~A-1~~ A-2.

~~Table A-1~~

			~~Annual Energy Consumption (kWh)~~	
~~*Appliance*~~	~~*Defrost*~~	~~*Style*~~	~~*Effective Jan. 1, 1987*~~	~~*Effective Jan. 1, 1992*~~
~~Refrigerators~~	~~Manual[1]~~ ~~Automatic~~	~~All~~ ~~All~~	~~17.3 AV + 340~~	~~13.7 AV + 267~~ ~~17.4 AV + 344~~
~~Refrigerator-Freezers less than 9 cubic feet~~	~~All~~	~~All[2]~~	~~24.7 AV + 486~~	~~17.4 AV + 344~~
~~Refrigerator-Freezers 9 cubic feet or larger~~	~~Manual~~	~~All[2]~~	~~24.7 AV + 486~~	~~17.4 AV + 344~~
	~~Partial Automatic~~	~~All~~	~~24.7 AV + 486~~	~~17.4 AV + 344~~
	~~Automatic~~	~~Top-mounted[3] or internally mounted Freezer~~	~~24.1 AV + 487~~	~~16.7 AV + 336~~
	~~Automatic~~	~~Side-mounted Freezer or~~	~~30.3 AV + 535~~	~~22.4 AV + 395~~
	~~Automatic~~	~~Bbottom-mounted Freezer~~	~~30.3 AV + 535~~	~~22.4 AV + 395~~
	~~Automatic~~	~~Top-mounted Freezer with Through the door Ice service~~	~~26.8 AV + 540~~	~~18.5 AV + 374~~
	~~Automatic~~	~~Side-mounted Freezer with Through the door Ice service~~	~~33.6 AV + 594~~	~~24.8 AV + 438~~
~~Freezers~~	~~Manual~~ ~~Automatic~~ ~~All~~	~~Upright~~ ~~Upright~~ ~~Chest~~	~~21.4 V + 480~~ ~~33.7 V + 755~~ ~~14.8 V + 384~~	~~14.5 V + 324~~ ~~21.3 V + 477~~ ~~10.9 V + 282~~

~~AV = adjusted volume = [1.63 x freezer volume(ft^3)] + refrigerator volume(ft^3).~~
~~V = freezer volume (ft^3).~~

~~1. This classification includes refrigerators with partial automatic defrost systems.~~
~~2. This classification includes refrigerators with automatic defrost systems.~~
~~3. This classification includes refrigerator-freezers with internally mounted freezers.~~

~~(2) The energy consumption of all new refrigerators, refrigerator-freezers and freezers that are consumer products and that are manufactured on or after January 1, 1990, is required by federal law not to exceed the values shown in Table A-2. These appliances are defined in federal regulations (10 Code of Federal Regulations Section 430.2 (1991) as follows:~~

> ~~"Electric refrigerator' means a cabinet designed for the refrigerated storage of food at temperatures above 32°F., and having a source of refrigeration requiring single phase, alternating current electric energy input only. An electric refrigerator may include a compartment for the freezing and storage of food at temperatures below 32°F., but does not provide a separate low temperature compartment designed for the freezing and storage of food at temperatures below 8°F."~~
>
> ~~"Electric refrigerator-freezer' means a cabinet which consists of two or more compartments with at least one of the compartments designed for the refrigerated storage of food at temperatures above 32°F. and with at least one of the compartments designed for the freezing and storage of food at temperatures below 8°F. which may be adjusted by the user to a temperature of 0°F. or below. The source of refrigeration requires single phase, alternating current electric energy input only."~~
>
> ~~"Freezer' means a cabinet designed as a unit for the freezing and storage of food at temperatures of 0°F. or below, and having a source of refrigeration requiring single phase, alternating current electric energy input only."~~

~~Table A-2~~

~~*Appliance Type*~~	~~*Annual Energy Consumption kWh Effective 1/1/90*~~	~~*Annual Energy Consumption kWh Effective 1/1/93*~~
~~Refrigerators and refrigerator-Freezers with manual defrost~~	~~16.3 AV + 316~~	~~13.5 AV + 299~~
~~Refrigerator-freezers—partial Automatic defrost~~	~~21.8 AV + 429~~	~~10.4 AV + 398~~
~~Refrigerator-freezers—automatic Defrost with top-mounted freezer Without through-the-door ice service*~~	~~23.5 AV + 471~~	~~16.0 AV + 355~~
~~Refrigerator-freezers—automatic Defrost with side-mounted freezer Without through-the-door ice service~~	~~27.7 AV + 488~~	~~11.8 AV + 501~~
~~Refrigerator-freezers—automatic Defrost with bottom-mounted freezer Without through-the-door ice service~~	~~27.7 AV + 488~~	~~16.5 AV + 367~~
~~Refrigerator-freezers—automatic Defrost with top-mounted freezer With through-the-door ice service~~	~~26.4 AV + 535~~	~~17.6 AV + 391~~
~~Refrigerator-freezers—automatic Defrost with side-mounted freezer With through-the-door ice service~~	~~30.9 AV + 547~~	~~16.3 AV + 527~~
~~Upright freezers with manual Defrost~~	~~10.9 AV + 422~~	~~10.3 AV + 264~~
~~Upright freezers with automatic Defrost~~	~~16.0 AV + 623~~	~~14.9 AV + 391~~
~~Chest freezers and all other Freezers~~	~~14.8 AV + 223~~	~~11.0 AV + 160~~

~~* Including all refrigerators with automatic defrost~~

~~AV = Adjusted volume = [1.44 x freezer volume (ft^3)] + refrigerator volume (ft^3) for refrigerators; [1.63 x freezer volume (ft^3)] + refrigerator volume (ft^3) for refrigerator-freezers; [1.73 x freezer volume (ft^3)] for freezers~~

Table A-2

Product class	***Energy standards equations for maximum energy use (kWh/yr)***	
	Effective January 1, 1993	***Effective July 1, 2001***
Refrigerators and Refrigerator-freezers with manual defrost	13.5AV+299	8.82AV+248.4
Refrigerator-Freezer—partial automatic defrost	10.4AV+398	8.82AV+248.4
Refrigerator-Freezers—automatic defrost with top-mounted freezer without through-the-door ice service and all-refrigerators--automatic defrost	16.0AV+355	9.80AV+276.0
Refrigerator-Freezers—automatic defrost with side-mounted freezer without through-the-door ice service	11.8AV+501	4.91AV+507.5
Refrigerator-Freezers—automatic defrost with bottom-mounted freezer without through-the-door ice service	16.5AV+367	4.60AV+459.0
Refrigerator-Freezers—automatic defrost with top-mounted freezer with through-the-door ice service	17.6AV+391	10.20AV+356.0
Refrigerator-Freezers—automatic defrost with side-mounted freezer with through-the door ice service	16.3AV+527	10.10AV+406.0
Upright freezers with Manual Defrost	10.3AV+264	7.55AV+258.3
Upright freezers with Automatic Defrost	14.9AV+391	12.43AV+326.1
Chest Freezers and all other Freezers except Compact Freezers	11.0AV+160	9.88AV+143.7
Compact Refrigerators and Refrigerator-Freezers with Manual Defrost	13.5AV+299[a]	10.70AV+299.0
Compact Refrigerator-Freezers—partial automatic defrost	10.4AV+398[a]	7.00AV+398.0
Compact Refrigerator-Freezers—automatic defrost with top-mounted freezer and compact all-refrigerators—automatic defrost	16.0AV+355[a]	12.70AV+355.0
Compact Refrigerator-Freezers—automatic defrost with side-mounted freezer	11.8AV+501[a]	7.60AV+501.0
Compact Refrigerator-Freezers—automatic defrost with bottom-mounted freezer	16.5AV+367[a]	13.10AV+367.0
Compact Upright Freezers with Manual Defrost	10.3AV+264[a]	9.78AV+250.8
Compact Upright Freezers with Automatic Defrost	14.9AV+391[a]	11.40AV+391.0
Compact Chest Freezers	11.0AV+160[a]	10.45AV+152.0

AV=Total adjusted volume, expressed in ft^3, as determined in 10 CFR, Part 430, Appendices A1 and B1 of subpart B.

[a] Applicable standards for compact refrigerator products manufactured before July 1, 2001. Compact refrigerator products are not separate product categories under the standards effective January 1, 1993.

"Compact refrigerator/refrigerator-freezer/freezer" means any refrigerator, refrigerator-freezer or freezer with total volume less than 7.75 cubic feet (rated volume as determined in 10 CFR, Part 430, Appendix A1 and B1 of Subpart B) and 36 inches or less in height.

(2) Exceptions for freezers with volume greater than 30 cubic feet, commercial refrigerators, refrigerator-freezers, and freezers, and wine chillers. There is no energy efficiency or energy design standard in this section for freezers with volume exceeding 30 cubic feet, commercial refrigerators, refrigerator-freezers, and freezers, or wine chillers.

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(3) See Section 1604.2 for standards for wine chillers.

(b) Room Air Conditioners ~~(including Packaged Terminal Units)~~ , room air conditioning heat pumps, packaged terminal air conditioners, and packaged terminal heat pumps.

(1) Room air conditioners and room air conditioning heat pumps. The energy efficiency ratio ~~and thermal efficiency (where applicable)~~ of ~~all new room air conditioners manufactured between November 3, 1979 and December 31, 1989 and~~ all ~~new~~ room air conditioners ~~that are not consumer products and that are manufactured on or after January 1, 1990~~ and room air conditioning heat pumps shall be ~~certified to be~~ not less than the values shown in Table B-2. The energy efficiency ratio of room air conditioners~~,~~ that are labeled for use at more than one voltage shall be ~~certified not to be~~ not less than the values shown in Table B-2 at each of the labeled voltages.

~~Table B-2~~

~~*Appliance*~~	~~*Energy Efficiency Ratio*~~	~~*Thermal Efficiency*~~
~~Room air conditioners~~ ~~– those with heating capability~~		~~90%~~
~~Room air conditioners~~ ~~– those designed for use with a supply of at least 200 volts~~	~~8.2~~	
~~– other heat pumps~~	~~8.3~~	
~~– all other room air conditioners~~	~~8.7~~	

Table B-2

Product class	*Energy efficiency ratio effective as of*	
	January 1, 1990	*October 1, 2000*
Without reverse cycle, with louvered sides, and less than 6,000 Btu/h	8.0	9.7
Without reverse cycle, with louvered sides, and 6,000 to 7,999 Btu/h	8.5	9.7
Without reverse cycle, with louvered sides, and 8,000 to 13,999 Btu/h	9.0	9.8
Without reverse cycle, with louvered sides and 14,000 to 19,999 Btu/h	8.8	9.7
Without reverse cycle, with louvered sides, and 20,000 Btu/h or more	8.2	8.5
Without reverse cycle, without louvered sides, and less than 6,000 Btu/h	8.0	9.0
Without reverse cycle, without louvered sides, and 6,000 to 7,999 Btu/h	8.5	9.0
Without reverse cycle, without louvered sides, and 8,000 to 13,999 Btu/h	8.5	8.5
Without reverse cycle, without louvered sides, and 14,000 to 19,999 Btu/h	8.5	8.5
Without reverse cycle, without louvered sides, and 20,000 Btu/h or more	8.2	8.5
With reverse cycle, with louvered sides, and less than 20,000 Btu/h	8.5	9.0
With reverse cycle, without louvered sides, and less than 14,000 Btu/h	8.0	8.5
With reverse cycle, with louvered sides, and 20,000 Btu/h or more	8.5	8.5
With reverse cycle, without louvered sides, and 14,000 Btu/h or more	8.0	8.0
Casement-Only	*	8.7
Casement-Slider	*	9.5

*Casement-only and casement-slider room air conditioners are not separate product classes under standards effective January 1, 1990. These units are subject to the applicable standards in the other 14 classes based on unit capacity and the presence or absence of louvered sides and a reverse cycle.

(2) Packaged terminal air conditioners and packaged terminal heat pumps. The energy efficiency ratio and coefficient of performance, as ~~appropriate~~ applicable, of all ~~new room air conditioners that are not consumer products and that are~~ packaged terminal air conditioners and packaged terminal heat pumps ~~manufactured on or after January 1, 1991~~ shall be ~~certified not to be~~ not less than the values shown in Table B-3.

Table B-3

Category	*Rating Condition (Outdoor Temp.°F)*	~~*Jan. 1, 1991*~~	~~*Jan. 1, 1992*~~ *Efficiency*
Packaged terminal air conditioners and packaged terminal heat pumps[b] (cooling mode)	Standard Rating (95db)	~~10.0 (.19 x Cap. /1000) EER~~	10.0-(.16 x Cap. /1000) EER
	~~Low Temp. Rating (82db)[a]~~	~~12.0 (.23 x Cap. /1000) EER~~	~~12.2 (.20 x Cap. /1000) EER~~
Packaged terminal heat pumps (heating mode)	Standard Rating (47db/43wb)	~~1.3 + 0.16 (EER_{95} Above) COP~~	~~1.3 + 0.16 (EER_{95} Above) COP~~ 2.9-(0.026 x Cap./1000)

~~a. For multi-capacity equipment the minimum performance shall apply to each capacity step provided and allowed by the controls.~~

b. If the unit's capacity is less than 7,000 Btu/h, use 7,000 Btu/h in the calculation. If the unit's capacity is greater than 15,000 Btu/h, use 15,000 Btu/h in the calculation.

c. db = dry bulb temperature

d. wb = wet bulb temperature

e. EER = energy efficiency ratio

f. COP = coefficient of performance

g. Cap.= rated cooling capacity (Btu/hour)

~~(3) The energy efficiency ratio of all new room air conditioners that are consumer products and that are manufactured on or after January 1, 1990 is required by federal law to be not less than the values shown in Table B-4. These appliances are defined in federal regulations as (10 Code of Federal Regulations Section 430.2 (1991)) as follows:~~

~~"'Room air conditioner' means a consumer product, other than a 'packaged terminal air conditioner,' which is powered by a single phase electric current and which is an encased assembly designed as a unit for mounting in a window or through the wall for the purpose of~~

providing delivery of conditioned air to an enclosed space. It includes a prime source of refrigeration and may include a means for ventilating and heating."

Table B-4

Room Air Conditioner Type	*Energy Efficiency Ratio*
Without reverse cycle and with louvered sides less than 6,000 Btu	8.0
Without reverse cycle and with louvered sides 6,000 to 7,999 Btu	8.5
Without reverse cycle and with louvered sides 8,000 to 13,999 Btu	9.0
Without reverse cycle and with louvered sides 14,000 to 19,999 Btu	8.8
Without reverse cycle and with louvered sides 20,000 and more Btu	8.2
Without reverse cycle and without louvered sides less than 6,000 Btu	8.0
Without reverse cycle and without louvered sides 6,000 to 7,999 Btu	8.5
Without reverse cycle and without louvered sides 8,000 to 13,999 Btu	8.5
Without reverse cycle and without louvered sides 14,000 to 19,999 Btu	8.5
Without reverse cycle and without louvered sides 20,000 and more Btu	8.2
With reverse cycle and with louvered sides	8.5
With reverse cycle, without louvered sides	8.0

(c) Central Air Conditioners.

(1) The energy efficiency ratio, seasonal energy efficiency ratio, coefficient of performance, and/or heating seasonal performance factor, as applicable, of all new central air conditioners manufactured on or after the date specified in Table C-2 shall be certified to be not less than the values shown in. The energy efficiency ratio, seasonal energy efficiency ratio, coefficient of performance, and/or heating seasonal performance factor, as applicable, of central air conditioners, including heat pumps, labeled for use at more than one voltage shall be certified not to be less than the values shown at each of the labeled voltages.

Table C-2

Effective Date	*Appliance*	*Energy Efficiency Ratio*	*Seasonal Energy Efficiency Ratio*	*Coefficient Of Performance*	*Heating Seasonal Performance Factor*
January 1, 1988	Computer room air conditioners*				
	air cooled less than 65,000 Btu per hour	8.3	—	—	—
	water cooled less than 65,000 Btu per hour	8.1	—	—	—
	air cooled 65,000 to 135,000 Btu per hour	7.7	—	—	—
	water cooled 65,000 to 135,000 Btu per hour	8.4	—	—	—
January 1, 1984	Other central air conditioners 65,000 to 135,000 Btu per hour (including heat pumps)				
	air source	8.2	—	—	—
	water source	9.2	—	—	—
	evaporative source	9.2	—	—	—
January 1, 1988	Other central air conditioners less than 65,000 Btu per hour				
	air cooled (excluding heat pumps)	—	8.9	—	—
	air source heat pumps	—	8.9	—	6.6
	water cooled (excluding heat pumps)	8.0	—		—
	water source heat pumps	9.9	—	3.2	—

*When tested using the standard, ANSI/ASHRAE 127-1988

(2) The adjusted coefficient of performance of all new central air-conditioning heat pumps manufactured on or between the dates specified in Table C-3 shall be certified not to be less than the values shown. The adjusted coefficient of performance of central air conditioners labeled for use at more than one voltage shall be certified not to be less than the values shown at each of the labeled voltages.

Table C-3

Effective Date	*Appliance*	*Adjusted Coefficient Of Performance Air Source* 47° outdoor temp.	*Adjusted Coefficient Of Performance Air Source* 17° outdoor temp.	*Coefficient of Performance Water Source* 70°
November 3, 1979 Through December 31, 1990	Central air-Conditioning heat pumps not less than 65,000 Btu/hour	2.5	1.5	2.5

(1) ~~(3)~~ The energy efficiency ratio, seasonal energy efficiency ratio, coefficient of performance, ~~integrated part load value,~~ and heating seasonal performance factor, as applicable, of all ~~new~~ central air conditioners ~~that are not consumer products and that are manufactured on or after the dates specified in Tables C-4, C-5, C-6, and C-7~~ shall be ~~certified to be~~ not less than the values shown in Tables C-2, C-3, C-4, and C-5.

Table ~~C-4~~ C-2

Category	~~*Category*~~ *Cooling capacity*	~~*Phase*~~	*Sub-Category & Rating Condition (Outdoor Temp.°F)*	~~*Jan. 1, 1991*~~	~~*Jan. 1, 1992*~~	~~*Jan. 1, 1993*~~ *Efficiency*
Air-cooled ~~central~~ unitary air conditioners and heat pumps (cooling mode)	<65,000 BTU/HR ~~Cooling Capacity~~	~~All~~	Seasonal Rating (split system) Seasonal Rating (single package)	~~8.9 SEER~~ ~~8.9 SEER~~	~~10.0 SEER~~ ~~8.9 SEER~~	10.0 SEER ~~9.9 SEER~~ 9.7 SEER
	≥65,000 <135,000 BTU/HR ~~Cooling Capacity~~	~~All~~	Standard Rating (95 db) ~~Integrated Part Load Value (80db)~~	~~8.3 EER~~ ~~7.3 IPLV~~	~~8.9 EER~~ ~~8.3 IPLV~~	8.9 EER ~~8.3 IPLV~~
	=> 135,000 BTU/HR < 240,000 BTU/HR		Standard Rating (95 db)			8.5 EER
Air-cooled ~~central~~ unitary air-conditioning heat pumps (heating mode)	<65,000 BTU/HR ~~Cooling Capacity~~	~~All~~	Seasonal Rating (split system) Seasonal Rating (single package)	~~6.6 HSPF~~ ~~6.6 HSPF~~	~~6.8 HSPF~~ ~~6.6 HSPF~~	6.8 HSPF 6.6 HSPF
	≥65,000 <135,000 BTU/HR ~~Cooling Capacity~~	~~All~~	High Temp. Rating (47db/43 wb) ~~Low Temp. Rating (17db/15wb)~~	~~2.8 COP~~ ~~1.9 COP~~	~~3.0 COP~~ ~~2.0 COP~~	3.0 COP ~~2.0 COP~~
	=>135,000 BTU/HR <240,000 BTU/HR		High Temp. Rating (47db/43 wb)			2.9 COP

db = dry bulb temperature
wb = wet bulb temperature
SEER = seasonal energy efficiency ratio
~~IPLV = integrated part load value~~
EER = energy efficiency ratio
HSPF = heating seasonal performance factor
COP = coefficient of performance

Table ~~C-5~~ C-3

Category	~~*Category*~~ *Cooling capacity*	*Rating Condition °F* ~~*Indoor Temp.*~~ *Outdoor Temp.*	~~*Jan. 1, 1991*~~	~~*Jan. 1, 1992*~~	~~*Jan. 1, 1993*~~ *Efficiency*
Evap-oratively cooled unitary air conditioners	<65,000 BTU/HR ~~Cooling Capacity~~	Standard Rating ~~80 db/67wb~~ 95db/75wb ~~Integrated Part Load Value~~ ~~(80db/67wb)~~	~~9.0 EER~~ ~~8.0 IPLV~~	~~9.3 EER~~ ~~8.5 IPLV~~	9.3 EER ~~8.5 IPLV~~
	≥65,000 <135,000 BTU/HR ~~Cooling Capacity~~	Standard Rating ~~80 db/67wb~~ 95db/75wb ~~Integrated Part Load Value~~ ~~(80db/67wb)~~	~~9.5 EER~~ ~~8.5 IPLV~~	~~10.5 EER~~ ~~9.7 IPLV~~	10.5 EER ~~9.7 IPLV~~
	=>135,000 <240,000 BTU/HR	Standard Rating 95db/75wb			9.6 EER

db = dry bulb temperature
wb = wet bulb temperature
EER = energy efficiency ratio
~~IPLV = integrated part load value~~

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Table ~~C-6~~ C-4

		Rating Condition °F				
Category	~~*Category Cooling Capacity*~~	*Indoor Temp.*	*Entering Water*	~~*Jan. 1, 1991*~~	~~*Jan. 1, 1992*~~	~~*Jan.1, 1993*~~
~~Water-source Heat Pumps~~	~~<65,000 BTU/HR Cooling Capacity~~	~~Standard Rating 80db/67wb~~ ~~Low-Temperature Rating 80db/67wb~~	~~85~~	~~9.0 EER~~ ~~9.7 EER~~	~~9.3 EER~~ ~~10.2 EER~~	~~10.0 EER~~ ~~10.2 EER~~
	~~=>65,000 BTU/HR <135,000 BTU/HR Cooling Capacity~~	~~Standard Rating 80db/67wb~~	~~85~~	~~9.5 EER~~	~~10.5 EER~~	~~10.5 EER~~
~~Groundwater-Cooled Heat Pumps~~	~~<135,000 BTU/HR Cooling Capacity~~	~~Standard Rating~~ ~~Low-Temperature Rating~~	~~70~~ ~~50~~	~~10.0 EER~~ ~~10.5 EER~~	~~11.0 EER~~ ~~11.5 EER~~	~~11.0 EER~~ ~~11.5 EER~~
Water-Cooled Unitary Air Conditioners	<65,000 BTU/HR ~~Cooling Capacity~~	Standard Rating ~~80db/67wb~~ ~~Integrated Part Load Value~~	85	~~9.0 EER~~ ~~8.0 IPLV~~	~~9.3 EER~~ ~~8.3 IPLV~~	9.3 EER
	≥65,000 <135,000 BTU/HR ~~Cooling Capacity~~	Standard Rating ~~80db/67wb~~	85	~~9.5 EER~~	~~10.5 EER~~	10.5 EER
	=>135,000 <240,000 BTU/HR	Standard Rating	85			9.6 EER

~~db = dry bulb temperature~~
~~wb = wet bulb temperature~~
EER = energy efficiency ratio
~~IPLV = integrated part load value~~

See Section 1604.2 (c) for standards for water source heat pumps < 135,000 Btu/hr and groundwater-source heat pumps.

Table ~~C-7~~ C-5

.

	Rating Condition °F [a]	~~*Jan. 1, 1991*~~	~~*Jan. 1, 1992*~~	~~*Jan. 1, 1993*~~ *COP*
Water-Source Heat Pumps	Standard Rating 70 Entering Water[b]	~~3.3 COP~~	~~3.8 COP~~	3.8 ~~COP~~
~~Groundwater-Source Heat Pumps~~	~~High Temperature Rating 70 Entering Water[b]~~	~~3.2 COP~~	~~3.4 COP~~	~~3.5 COP~~
	~~Low Temperature Rating 50 Entering Water[b]~~	~~2.8 COP~~	~~3.0 COP~~	~~3.0 COP~~

COP = Coefficient of performance
a = Air entering indoor section 70 db/60 wb (max.)
b = Water Flow Rate Per Mfg. Spec

~~(4) The seasonal energy efficiency ratio of all new central air conditioners that are federally regulated consumer products and that are manufactured on or after the dates shown in Table C-8 and C-7, and the heating seasonal performance factor of all new central air-conditioning heat pumps that are consumer products and that are manufactured on or after the dates shown in Table C-8 C-7 are required by federal law to be not less than the values shown (10 Code of Federal Regulations Section 430.32(c) (1991)).~~

~~Table C-8~~

~~*Effective Date*~~	~~*Type*~~	~~*Seasonal Energy Efficiency Ratio*~~	~~*Heating Seasonal Performance Factor*~~
~~January 1, 1992~~	~~Split system~~	~~10.0~~	~~6.8~~
~~January 1, 1993~~	~~Single package~~	~~9.7~~	~~6.6~~

~~These appliances are defined in federal regulations (10 Code of Federal Regulations Section 430.2 (1991)(1993) as follows:~~

~~"'Central air conditioner' means a product, other than a packaged terminal air conditioner, which is powered by single phase electric current, air cooled, rated below 65,000 Btu per hour, not contained within the same cabinet as a furnace, the rated capacity of which is above 225,000 Btu per hour, and is a heat pump or a cooling unit only."~~

(d) Spot Air Conditioners.~~[Reserved]~~ There is no energy efficiency or energy design standard for spot air conditioners.

(e) Gas and Oil Space Heaters.

(1) ~~The seasonal efficiency of all new fan type gas central furnaces manufactured between January 1, 1988 and December 31, 1991, and all new fan type gas furnaces that are not consumer products and that are manufactured on or after January 1, 1992 shall be certified not to be less than the values shown in Table E-2.~~

~~Table E-2~~

~~*Appliance*~~	~~*Seasonal Efficiency*~~
~~Gas fan type central furnaces~~	
~~weatherized~~	~~71%~~
~~nonweatherized~~	~~72%~~

~~(2)~~ The ~~seasonal~~ annual fuel utilization efficiency of all new gas wall furnaces, floor furnaces ~~,~~and room heaters ~~manufactured between January 1, 1987 and December 31, 1989 and all new wall furnaces, floor furnaces and room heaters that are not consumer products and that are manufactured on or after January 1, 1990~~ shall be ~~certified not to be~~ not less than the values shown in Table ~~E-3~~ E-2.

Table ~~E-3~~ E-2

Appliance	~~*Seasonal*~~ *Annual Fuel Utilization Efficiency*
Wall Furnaces	
fan type	
up to 42,000 Btu/hour	73%
over 42,000 Btu/hour	74%
gravity type	
up to 10,000 Btu/hour	59%
over 10,000 Btu/hour up to 12,000 Btu/hour	60%
over 12,000 Btu/hour up to 15,000 Btu/hour	61%
over 15,000 Btu/hour up to 19,000 Btu/hour	62%
over 19,000 Btu/hour up to 27,000 Btu/hour	63%
over 27,000 Btu/hour up to 46,000 Btu/hour	64%
over 46,000 Btu/hour	65%
Floor Furnaces	
Up to 37,000 Btu/hour	56%
Over 37,000 Btu/hour	57%
Room Heaters	
Up to 18,000 Btu/hour	57%
Over 18,000 Btu/hour up to 20,000 Btu/hour	58%
Over 20,000 Btu/hour up to 27,000 Btu/hour	63%
Over 27,000 Btu/hour up to 46,000 Btu/hour	64%
Over 46,000 Btu/hour	65%

~~(3) The annual fuel utilization efficiency of all new boilers with rated capacity less than 300,000 Btu/hour manufactured between January 1, 1987 and December 31, 1990 shall be certified not to be less than the values shown in Table E-4, and the energy consumption during standby (with the exceptions noted below) shall be certified not to exceed the values shown.~~

~~Table E-4~~

~~*Appliance*~~	~~*Energy Consumption During Standby*~~	~~*Annual Fuel Utilization Efficiency*~~
~~Boilers with capacity Under 300,000 Btu/hour~~		
~~Weatherized,~~	~~10 watts*~~	~~63%~~
~~Without continuous pilot~~	~~147 watts*~~	~~61%~~
~~With continuous pilot~~	~~10 watts*~~	~~65%~~
~~Nonweatherized,~~	~~147 watts*~~	~~63%~~
~~Without continuous pilot~~		
~~With continuous pilot~~		

~~* For boilers designed expressly for use with liquefied petroleum gases, the maximum energy consumption during standby shall not exceed 293 watts.~~

~~(4)~~ (2)The annual fuel utilization efficiency, ~~and~~ thermal efficiency ~~as appropriate~~, and combustion efficiency, as applicable, of all ~~new~~ central gas and oil furnaces and ~~gas~~ boilers, ~~which are not consumer products and all new duct furnaces and unit heaters that are manufactured on or after the dates shown~~ shall be ~~certified to be~~ not less than the values shown in Tables ~~E-5, E-6 and E-7~~ E-3, and E-4, shall be not greater than the values shown in Table E-3.

Table ~~E-5~~ E-3

Category	*Rating Condition*	~~*January 1, 1987*~~	~~*January 1, 1991*~~	~~*January 1, 1992*~~ *Efficiency*
Gas and oil boilers Single phase <300,000 BTU/HR	Seasonal Rating (AFUE) Gas steam boilers All others	- -	~~68%~~ ~~68%~~	75% 80%
Gas Packaged Boilers ≥300,000 BTU/HR	Max. Rated Capacity[a] Combustion Efficiency	~~75%~~	~~75%~~	80%
	~~Min. Rated Capacity[a]~~ ~~Combustion Efficiency~~	-	~~72%~~	80%
	~~Energy Consumption During Standby~~	~~147 watts~~	~~147 watts~~	~~147 watts~~
Oil Packaged Boilers >300,000 BTU/HR	Max. Rated Capacity[a] Combustion Efficiency			83%

a provided and allowed by the controls

~~b For boilers designed expressly for use with liquefied petroleum gases, the energy consumption during standby shall not exceed 352 watts.~~

(3) See Section 1604.2(e) for standards for boilers that are not federally-regulated commercial and industrial equipment or a federally-regulated consumer product.

1604.1 Standards for Federally-Regulated Appliances

Table ~~E-6~~ E-4

Category	~~*Category*~~ *Rated Input*	*Rating Condition*	~~*January 1, 1991*~~	~~*January 1, 1992*~~ *Efficiency*
Gas and Oil Single Phase Central Furnaces	<225,000 BTU/HR	Seasonal Rating (AFUE)	~~68%~~	78%
Gas Central Furnaces	=>225,000 BTU/HR	Max. Rated Cap.[a] Steady State (Thermal Efficiency)	~~75%~~	80%
		~~Min. Rated Cap.[a] Steady State (Thermal Efficiency)~~	~~72%~~	78%
Oil Central Furnaces	=>225,000 BTU/HR	Max. Rated Cap.[a] Steady State (Thermal Efficiency)		81%
a Provided and allowed by the controls				

~~Table E-7~~

~~*Category*~~	~~*Rating Condition*~~	~~*December 22, 1983*~~	~~*Jan. 1, 1991*~~	~~*Jan. 1, 1992*~~
~~Duct Furnaces~~	~~Max. Rated Cap.[a] Steady State (Thermal Efficiency)~~	~~80%~~	~~80%~~	~~80%~~
	~~Min. Rated Cap.[a] Steady State (Thermal Efficiency)~~		~~72%~~	~~75%~~
	~~Energy Consumption During Standby[b]~~	~~10 watts~~	~~10 watts~~	~~10 watts~~
~~Unit Heaters~~	~~Max. Rated Cap.[a] Steady State (Thermal Efficiency)~~	~~80%~~	~~80%~~	~~80%~~
	~~Min. Rated Cap.[a] Steady State (Thermal Efficiency)~~		~~72%~~	~~74%~~
	~~Energy Consumption During Standby[b]~~	~~10 watts~~	~~10 watts~~	~~10 watts~~

~~a Provided and allowed by the controls~~
~~b For duct furnaces and unit heaters designed expressly for use with liquefied petroleum gases, the energy consumption during standby shall not exceed 147 watts.~~

(4) See Section 1604.2(e) for standards for duct furnaces and unit heaters.

(5)There is no energy efficiency standard or energy design standard for infrared gas heaters.

(5) The annual fuel utilization efficiency of all new gas wall furnaces, floor furnaces, room heaters, furnaces and boilers that are consumer products and that are manufactured on or after the dates shown in Table E-8 E-6 is required by federal law not to be less than the values shown. These appliances are defined in federal regulations (10 Code of Federal Regulations, section 430.2 (1991)) as follows:

"'Furnace' means a product which utilizes only single-phase electric current, or single-phase electric current or DC current in conjunction with natural gas, propane, or home heating oil, and which -

Is designed to be the principal heating source for the living space of a residence;
Is not contained within the same cabinet with a central air conditioner whose rated cooling capacity is above 65,000 Btu per hour;
Is an electric central furnace, electric boiler, forced air central furnace, gravity central furnace, or low pressure steam or hot water boiler; and
Has a heat input rate of less than 300,000 Btu per hour for electric boilers and low pressure steam or hot water boilers and less than 225,000 Btu per hour for forced air central furnaces, gravity central furnaces, and electric central furnaces...."

"'Home heating equipment, not including furnaces' means vented home heating equipment and unvented home heating equipment."

"'Vented home heating equipment' or 'vented heater' means a class of home heating equipment, not including furnaces, designed to furnish warmed air to the living space of a residence, directly from the device, without duct connections (except that boots not to exceed 10 inches beyond the casing may be permitted) and includes: vented wall furnace, vented floor furnace, and vented room heater."

"'Vented wall furnace' means a self-contained vented heater complete with grilles or the equivalent, designed for incorporation in, or permanent attachment to, a wall of a residence and furnishing heated air circulated by gravity or by a fan directly into the space to be heated through openings in the casing."

"'Vented floor furnace' means a self-contained vented heater suspended from the floor of the space being heated, taking air for combustion from outside this space. The vented floor furnace supplies heated air circulated by gravity or by a fan directly into the space to be heated through openings in the casing."

"'Vented room heater' means a self-contained, free-standing, nonrecessed, vented heater for furnishing warmed air to the space in which it is installed. The vented room heater supplies heated air circulated by gravity or by a fan directly into the space to be heated through openings in the casing."

"'Unvented home heating equipment' means a class of home heating equipment, not including furnaces, used for the purpose of furnishing heat to a space proximate to such heater directly from the heater and without duct connections and includes electric heaters and unvented gas and oil heaters."

"'Unvented gas heater' means an unvented, self-contained, free-standing, nonrecessed gas-burning appliance which furnishes warm air by gravity or fan circulation."

~~Table E-8~~

~~*Effective Date*~~	~~*Appliance Type*~~	~~*Annual Fuel Utilization Efficiency (percent)*~~
~~January 1, 1990~~	~~Gas wall fan type up to 42,000 Btu/hr~~	~~73~~
	~~Gas wall fan type over 42,000 Btu/hr~~	~~74~~
	~~Gas wall gravity type up to 10,000 Btu/hr~~	~~59~~
	~~Gas wall gravity type over 10,000 Btu/hr up to 12,000 Btu/hr~~	~~60~~
	~~Gas wall gravity type over 12,000 Btu/hr up to 15,000 Btu/hr~~	~~61~~
	~~Gas wall gravity type over 15,000 Btu/hr up to 19,000 Btu/hr~~	~~62~~
	~~Gas wall gravity type over 19,000 Btu/hr up to 27,000 Btu/hr~~	~~63~~
	~~Gas wall gravity type over 27,000 Btu/hr up to 46,000 Btu/hr~~	~~64~~
	~~Gas wall gravity type over 46,000 Btu/hr~~	~~65~~
	~~Gas floor up to 37,000 Btu/hr~~	~~56~~
	~~Gas floor over 37,000 Btu/hr~~	~~57~~
	~~Gas room up to 18,000 Btu/hr~~	~~57~~
	~~Gas room over 18,000 Btu/hr up to 20,000 Btu/hr~~	~~58~~
	~~Gas room over 20,000 Btu/hr up to 27,000 Btu/hr~~	~~63~~
	~~Gas room over 27,000 Btu/hr up to 46,000 Btu/hr~~	~~64~~
	~~Gas room over 46,000 Btu/hr~~	~~65~~
~~September 1, 1990~~	~~Mobile home furnace~~	~~75~~
~~January 1, 1992~~	~~Furnace (excluding mobile home furnaces, furnaces with an input rate less than 45,000 Btu/hour, and boilers)~~	~~78~~
	~~Gas steam boiler~~	~~75~~
	~~Other boilers~~	~~80~~

(f) Water Heaters

(1) The recovery efficiency or thermal efficiency (as applicable) of all new water heaters manufactured between May 21, 1981 and December 31, 1989 shall be certified to be not less than the values shown in Table F-1 and the standby loss shall be certified not to exceed the values shown.

Table F-1

Appliance	*Standby Loss*	*Recovery Efficiency*	*Thermal Efficiency*
Water heaters			
Electric, mobile Home storage type	4 watts per square foot	no requirement	no requirement
Electric, all other Storage type	35 watts or 4 watts per square foot, whichever is larger	no requirement	no requirement
Gas, mobile home with			
Storage capacity of	7.5 percent	75 percent	no requirement
Less than 25 gallons	7.0 percent	75 percent	no requirement
25 up to 35 gallons	6.0 percent	75 percent	no requirement
35 gallons or more			
Gas, small storage Type, other than			
Mobile home type (basic standard)	2.3 + 67 percent V	76 percent	no requirement
(alternative standard at manufacturer's option)	1.3 + 67 percent V	74 percent	no requirement
Gas, large storage Type	2.3 + 67 percent V	no requirement	76 percent
Gas, all others	no requirement	no requirement	75 percent

~~Where V = volume in gallons~~

~~(2)~~ (1) Large water heaters. The thermal efficiency of all ~~new~~ large water heaters ~~manufactured on or after the dates shown in Tables F-2 and F-3~~ shall be ~~certified to be~~ not less than the values shown in Table F-1 and the standby loss of all large water heaters shall be ~~certified not to exceed~~ not greater than the values shown in Table F-1.

~~Table F-2~~

~~*Effective Date*~~	~~*Large Water Heater Type*~~	~~*Standby Loss*~~	~~*Thermal Efficiency*~~
~~1/1/90 through 8/31/92~~	~~Gas storage type~~ ~~Gas instantaneous type~~ ~~no requirement~~	~~2.3 + 67/V percent~~ ~~no requirement~~	~~76%~~ ~~75%~~
	~~Electric storage type~~	~~4.0 watts per square foot, or 35 watts whichever is larger~~	~~no requirement~~
	~~Oil~~	~~no requirement~~	~~no requirement~~

~~Where V = volume in gallons~~

Table ~~F-3~~ F-1

~~*Effective Date*~~	*Type*	*Fuel*	*Input Rating Btu/hr*	*Volume (gallons)*	*Input to Volume Ratio (Btu/gal)*	*Thermal Efficiency %*	*Standby Loss* [1,2] *%/hr*
~~Sept. 1, 1992~~	~~all~~	~~gas~~	~~≤ 155,000~~ ~~> 155,000~~	~~All~~ ~~all~~ ~~< 10~~ ~~≥ 10~~	~~< 4,000~~ ~~< 4,000~~ ~~≥ 4,000~~ ~~≥ 4,000~~	~~78%~~ ~~78%~~ ~~80%~~ ~~77%~~	~~1.3 + 114/V~~ ~~1.3 + 95/V~~ ~~no requirement~~ ~~2.3 + 67/V~~
~~July 1, 1993~~	all storage all	gas electric oil	≤ 155,000 > 155,000 ≤155,000 >155,000	All all < 10 ≥ 10 all all all < 10 ≥ 10	< 4,000 < 4,000 ≥ 4,000 ≥ 4,000 all < 4,000 < 4,000 ≥ 4,000 ≥ 4,000	78% 78% 80% 77% no requirement 78% 78% 80% 77%	1.3 + 114/V 1/3 + 95/V no requirement 2.3 + 67/V 0.30 + 27/V 1.3 + 114/V 1.3 + 95/V no requirement 2.3 + 67/V

1. Where V = volume in gallons
2. Storage-type water heaters with volume exceeding 140 gallons need not meet the standby loss requirement if they are thermally insulated to at least R-12.5 and if a standing pilot light is not used.

~~(3)~~ (2) Small water heaters within the scope of the federal test method. The energy factor of all ~~new~~ small water heaters within the scope of the test procedure in 10 CFR section 430.22(e) (1999) ~~manufactured on or after January 1, 1990 that are not consumer products~~ shall be ~~certified to be~~ not less than the values shown in Table ~~F-4~~ F-2.

~~Table F-4~~

~~*Water Heater Type*~~	~~*Volume*~~	~~*Energy Factor*~~
~~Gas~~	~~≥ 20 gallons~~	~~0.62 - (.0019 x V)~~
~~Electric (including heat pump)~~	~~≥ 20 gallons~~	~~0.93 - (.00132 x V)~~
~~Oil~~	~~≥ 20 gallons~~	~~0.59 - (.0019 x V)~~
~~All~~	~~< 20 gallons~~	~~no requirement~~

~~where V = volume in gallons~~

~~(4) The energy factor of all new water heaters that are consumer products and that are manufactured on or after January 1, 1990 is required by federal law to be not less than the values shown in Table F-5. These appliances are defined in federal regulations (10 Code of Federal Regulations section 430.2 (1992) as follows:~~

~~"'Water heater' means a product which utilizes oil, gas, or electricity to heat potable water for use outside the heater upon demand, including:~~

~~(a) Storage type units which heat and store water at a thermostatically controlled temperature, including gas storage water heaters with an input of 75,000 Btu per hour or less, oil storage water heaters with an input of 105,000 Btu per hour or less, and electric storage water heaters with an input of 12 kilowatts or less;~~

~~(b) Instantaneous type units which heat water but contain no more than one gallon of water per 4,000 Btu per hour of input, including gas instantaneous water heaters with an input of 200,000 Btu per hour or less, oil instantaneous water heaters with an input of 210,000 Btu per hour or less, and electric instantaneous water heaters with an input of 12 kilowatts or less; and~~

~~(c) Heat pump type units, with a maximum current rating of 24 amperes at a voltage no greater than 250 volts, which are products designed to transfer thermal energy from one temperature level to a higher temperature level for the purpose of heating water, including all ancillary equipment such as fans, storage tanks, pumps, or controls necessary for the device to perform its function."~~

Table ~~F-5~~ F-2

Water Heater Type	~~*Energy Factor through April 14, 1991*~~	*Energy Factor* ~~*effective April 15, 1991*~~
Gas	~~0.62 - (.0019 x V)~~	0.62 - (.0019 x V)
Electric (including heat pump)	~~0.95 - (.00132 x V)~~	0.93 - (.00132 x V)
Oil	~~0.59 - (.0019 x V)~~	0.59 - (.0019 x V)
Where V = Rated volume in gallons		

See Section 1604.3(f) for standards for other small water heaters.

1604.1 Standards for Federally-Regulated Appliances

(g) Pool Heaters

(1) The thermal efficiency of all gas-fired and oil-fired pool heaters shall be not less than 78%.

(2) There is no energy efficiency standard for heat pump pool heaters.

See Section 1604.3(g) for design standards for pool heaters.

~~(g)~~(h) Plumbing Fittings.

(1) Maximum flow rate for all plumbing fittings. The ~~maximum~~ flow rate of all ~~new~~ showerheads, lavatory faucets, ~~sink~~ kitchen faucets, wash fountains and metering faucets ~~tub spout diverters manufactured on or after the dates specified in Table G~~ shall be ~~certified not to exceed~~ not greater than the values shown in Table H-1.

(2) Flow restricting mechanisms in showerheads. When a flow restricting mechanism is incorporated as a component of a showerhead, it shall be mechanically retained at the point of manufacture. Mechanically retained shall mean that a pushing or pulling force of at least eight pounds is required to remove the mechanism.

Table ~~G~~ H-1

~~*Effective Date*~~	*Plumbing Fittings*	*Maximum Flow Rate*
~~December 22, 1978~~	~~Showerheads~~ ~~Lavatory Faucets~~ ~~Sink Faucets~~	~~2.75 gpm~~ ~~2.75 gpm~~ ~~2.75 gpm~~
~~March 20, 1992~~	Showerheads Lavatory faucets ~~Sink~~ Kitchen faucets Wash fountains Metering faucets ~~Tub spout diverters (new)~~ ~~Tub spout diverters (after 15000 cycles of diverting)~~	2.5 gpm at 80 psi 2.2 gpm at 60 psi 2.2 gpm at 60 psi $\frac{\text{gpm at 80 psi}}{\text{50 psi}} \times 2.5$ 0.25 gals/cycle ~~0.1 gpm~~ ~~0.3 gpm~~

(3) See Section 1604.2(h) for standards for tub spout diverters.

(i) Plumbing Fixtures.

The flow rate of all new toilets and urinals shall be not greater than the values shown in Table I.

Table I

Plumbing Fixtures	*Maximum Gallons per Flush*
Gravity tank-type toilets	1.6
Flushometer tank toilets	1.6
Electromechanical hydraulic toilets	1.6
Blowout toilets	3.5
Trough-type urinals	$\frac{\text{urinal length (in.)}}{\text{10 in.}} \times 1.0$
Other urinals	1.0

~~(h)~~(j) Fluorescent Lamp Ballasts

~~(1)~~ The ballast efficacy factor of all ~~new~~ fluorescent lamp ballasts ~~manufactured between June 2, 1983 and December 31, 1989~~ shall be ~~certified to be~~ not less than the values shown in Table ~~H~~ J.

Table ~~H~~ J

Application for Operation of	*Ballast Input Voltage*	*Total Nominal Lamp Watts*	*Ballast Efficacy Factor*
one F40T12 lamp	120 or 277	40 ~~40~~	1.805 ~~1.805~~
two F40T12 lamps	120 277	80 80	1.060 1.050
two F96T12 lamps	120 or 277	150 ~~150~~	0.570 ~~0.570~~
two F96T12HO lamps	120 or 277	220	0.390

~~(2) The ballast efficacy factor of fluorescent lamp ballasts manufactured on or after January 1, 1990 is required by federal law (10 Code of Federal Regulations, section 430.32(m)(1991)) to be not less than the values shown in Table H.~~

(k) Lamps

The average lamp efficacy and color rendition index of general service fluorescent lamps and incandescent reflector lamps shall be not less than the values shown in Tables K-1 and K-2, as applicable.

Table K-1
General Service Fluorescent Lamps

Lamp Type	Nominal Lamp Wattage	Minimum Color Rendition Index	Minimum Average Lamp Efficacy (LPW)
4-foot medium bi-pin	>35 W <35 W	69 45	75.0 75.0
2-foot U-shaped	>35 W <35 W	69 45	68.0 64.0
8-foot slimline	>65 W <65 W	69 45	80.0 80.0
8-foot high output	>100 W <100 W	69 45	80.0 80.0

Table K-2
Incandescent Reflector Lamps

Nominal Lamp Wattage	Minimum Average Lamp Efficacy (LPW)
40-50	10.5
51-66	11.0
67-85	12.5
86-115	14.0
116-155	14.5
156-205	15.0

1604.1 Standards for Federally-Regulated Appliances

(l) Dishwashers

The energy factor of all dishwashers that are consumer products shall be not less than the values shown in Table L.

Table L

Product Class	*Energy Factor (Pounds per kWh)*
Compact dishwashers (less than 22 inches in exterior width)	0.62
Standard dishwasher (equal to or greater than 22 inches in Exterior width)	0.46

(m) Clothes Washers

(1) Energy efficiency standard for top-loading clothes washers. The energy factor of all top-loading compact and standard clothes washers that are consumer products shall be not less than the values shown in Table M.

Table M

Product Class	*Energy Factor (Cu. ft /kWh/cycle)*
Top loading, compact (< 1.6 ft^3 Capacity)	0.90
Top loading, standard (=>1.6 ft^3 Capacity)	1.18

(2) Energy design standard for top loading semi-automatic and front-loading clothes washers. Top-loading semi-automatic and front-loading clothes washers shall have an unheated rinse water option.

(n) Clothes Dryers

(1) Energy efficiency standard for electric clothes dryers. The energy factor of all electric clothes dryers that are consumer products shall be not less than the values shown in Table N.

Table N

Product Class	*Energy Factor (lbs/kWh)*
Electric, standard (=> 4.4 ft^3 Capacity)	3.01
Electric, compact (120 volts) (< 4.4 ft^3 capacity)	3.13
Electric, compact (240 volts) (< 4.4 ft^3 capacity)	2.90

(2) Energy efficiency and energy design standards for gas clothes dryers.

(A) The energy factor of all gas clothes dryers shall be not less than 2.67 pounds per kWh.

(B) Gas clothes dryers shall not be equipped with a constant burning pilot.

(o) Kitchen Ranges and Ovens

(1) Energy design standard for gas kitchen ranges and ovens with an electrical supply cord. Gas kitchen ranges and ovens with an electrical supply cord shall not be equipped with a constant burning pilot.

(2) All other kitchen ranges and ovens. There is no energy efficiency standard or energy design standard for other kitchen ranges and ovens.

(p) Television Sets

There is no energy efficiency standard or energy design standard for television sets.

1604.1 Standards for Federally-Regulated Appliances

(q) Electric Motors

The nominal full load efficiency of all electric motors that are federally-regulated commercial and industrial equipment shall be not less than the values shown in Table Q.

Table Q

Motor Horsepower	*Nominal Full-Load Efficiency*					
	Open Motors			*Closed Motors*		
	6 poles	*4 poles*	*2 poles*	*6 poles*	*4 poles*	*2 poles*
1	80.0	82.5	. . .	80.0	82.5	75.5
1.5	84.0	84.0	82.5	85.5	84.0	82.5
2	85.5	84.0	84.0	86.5	84.0	84.0
3	86.5	86.5	84.0	87.5	87.5	85.5
5	87.5	87.5	85.5	87.5	87.5	87.5
7.5	88.5	88.5	87.5	89.5	89.5	88.5
10	90.2	89.5	88.5	89.5	89.5	89.5
15	90.2	91.0	89.5	90.2	91.0	90.2
20	91.0	91.0	90.2	90.2	91.0	90.2
25	91.7	91.7	91.0	91.7	92.4	91.0
30	92.4	92.4	91.0	91.7	92.4	91.0
40	93.0	93.0	91.7	93.0	93.0	91.7
50	93.0	93.0	92.4	93.0	93.0	92.4
60	93.6	93.6	93.0	93.6	93.6	93.0
75	93.6	94.1	93.0	93.6	94.1	93.0
100	94.1	94.1	93.0	94.1	94.5	93.6
125	94.1	94.5	93.6	94.1	94.5	94.5
150	94.5	95.0	93.6	95.0	95.0	94.5
200	94.5	95.0	94.5	95.0	95.0	95.0

(r) Lighting Control Devices

See Section 1604.3(r) for design standards for lighting control devices.

(s) Demand Ventilation Control Devices

See Section 1604.3(s) for design standards for demand ventilation control devices.

§ 1604.2. Non-federally-regulated appliances; standards applicable to both sale (California enforcement) and to Title 24 construction (California enforcement).

These standards are exclusively state law. No appliance within the scope of this section shall be sold in California or installed in Title 24 construction unless, pursuant to section 1605, the manufacturer has certified that the appliance complies with the standards listed in this section and the appliance is listed in the database. In addition, no appliance within the scope of this section shall be sold in California, or installed in Title 24 construction, unless the manufacturer has (1) tested it as required by section 1603, and (2) marked it as required by section 1606.The standards in this section are enforced by the California Energy Commission with regard to sale, and by the California Energy Commission and local building departments with regard to installation in Title 24 construction.

In addition, no appliance within the scope of this section shall be installed in Title 24 construction, unless the manufacturer has (1) tested it as required by section 1603, (2) reported its performance as required by section 1605, and (3) marked it as required by section 1606.

(a) Refrigerators, Refrigerator-freezers and Freezers.

(1) Energy efficiency standard for wine chillers. The energy consumption of wine chillers shall be not greater than the values shown in Table A-3

Table A-3

Product class	*Energy standards equations for maximum energy use (kWh/yr)*
Wine chillers with manual defrost that are consumer products	13.7V + 267
Wine chillers with automatic defrost that are consumer products	17.4V + 344

V=volume in ft^3

(2) There is no energy efficiency standard or energy design standard for freezers with volume exceeding 30 cubic feet.

(3) There is no energy efficiency standard or energy design standard for commercial refrigerators, including refrigerated bottled and canned beverage vending machines.

(4) See Sections 1604.1(a) for standards for refrigerators, refrigerator-freezers, and freezers that are federally-regulated consumer products

(b) Room Air Conditioners, Room Air Conditioning Heat Pumps, Packaged Terminal Air Conditioners, and Packaged Terminal Heat Pumps.

1604.2 Non-Federally-Regulated Appliances – Sale and Installation Standards

There is no energy efficiency standard or energy design standard in this section for room air conditioners, room air conditioning heat pumps, packaged terminal air conditioners, or packaged terminal heat pumps. See Section 1604.1(b) for standards for such appliances.

(c) Central Air Conditioners: (1) Energy efficiency standards for large air-source heat pumps, water-source heat pumps and groundwater-source heat pumps. The energy efficiency ratio and coefficient of performance as applicable for all air-source heat pumps => 240,000 Btu/hour, water-source heat pumps and groundwater-source heat pumps shall be not less than the values shown in Table C-6.

Table C-6

Category	*Rated Output*	*Rating Condition*	*Efficiency*
Air source heat pumps (cooling)	>240,000 <760,000 Btu/hr	Standard Rating	8.5 EER 7.5 IPLV
	>7600,000 Btu/hr	Standard Rating	8.2 EER 7.5 IPLV
Air source heat pumps (heating)	>240,000 Btu/hr	47° F outdoor db 17° F outdoor db	2.9 COP 2.0 COP
Water source heat pumps (cooling)	>65,000 < 135,000 Btu/hr	85° F entering water temperature[ab]	10.5 EER
Groundwater-source Heat Pumps (cooling)	<135,000 BTU/HR Cooling Capacity	70° F entering water temperature[ab] 50° F entering water temperature[ab]	11.0 EER 11.5 EER
Groundwater-source Heat Pumps (heating)	All	70° F entering water temperature[ab] 50° F entering water temperature[ab]	3.5 COP 3.0 COP

EER = Energy Efficiency Ratio
COP = Coefficient of performance
IPLV = Integrated Part Load Value
a = Air entering indoor section 70 db/60 wb (max.)
b = Water Flow Rate Per Mfg. Spec.

See Sections 1604.1(c) and 1604.3(c) for energy efficiency standards for other types of central air conditioners.

(d) Spot Air Conditioners. There is no energy efficiency standard or energy design standard for spot air conditioners.

(e) Gas and Oil Space Heaters: boilers, central furnaces, duct furnaces, and unit heaters.

(1) The efficiency of all new three phase boilers, boilers with input of 300,000 Btu/hr or more that are not packaged boilers, three phase central furnaces, duct furnaces, and unit heaters shall be not less than the values shown in Tables E-5, E-6, and E-7, as applicable.

Table E-5

Category	*Rating Condition*	*Efficiency*
Three phase gas and oil boilers <300,000 BTU/HR	Seasonal Rating (AFUE) Gas steam boilers All others	75% 80%
Non-packaged gas boilers =>300,000 BTU/HR	Max. Rated Capacity[a] Combustion Efficiency Min. Rated Capacity[a] Combustion Efficiency Energy Consumption During Standby[b]	80% 80% 147 watts
Non-packaged oil boilers =>300,000 BTU/HR	Max. Rated Capacity[a] Combustion Efficiency Min. Rated Capacity[a] Combustion Efficiency	83% 83%

a provided and allowed by the controls

b For boilers designed expressly for use with liquefied petroleum gases, the energy consumption during standby shall not exceed 352 watts

Table E-6

Category	*Rated Input*	*Rating Condition*	*Efficiency*
Three phase mobile home central furnaces	<225,000 BTU/HR	Seasonal Rating (AFUE)	75%
Other three phase central furnaces	<225,000 BTU/HR	Seasonal Rating (AFUE)	78%

Table E-7

Category	*Rating Condition*	*Thermal Efficiency*
Gas Duct Furnaces	Max. Rated Cap.[a]	80%
	Min. Rated Cap.[a]	75%
	Energy Consumption During Standby[b]	10 watts
Gas Unit Heaters	Max. Rated Cap.[a]	80%
	Min. Rated Cap.[a]	74%
	Energy Consumption During Standby[b]	10 watts
Oil Unit Heaters	Max. Rated Cap.[a]	81%
	Min. Rated Cap.[a]	81%

a Provided and allowed by the controls

b For duct furnaces and unit heaters designed expressly for use with liquefied petroleum gases, the energy consumption during standby shall not exceed 147 watts.

(2) There is no energy efficiency standard or energy design standards for infrared gas heaters.

(3) See Sections 1604.1(e) and 1604.3(e) for additional standards for boilers.

1604.2 Non-Federally-Regulated Appliances – Sale and Installation Standards

(f) Water Heaters

(1) The energy factor of all small water heaters that have a volume of 20 gallons or more and that are not within the scope of the test procedure in 10 CFR section 430.22(e) (1999) shall be not less than the applicable values shown in Table F-3.

Table F-3

Water Heater Type	*Energy Factor*
Gas	0.62 - (.0019 x V)
Electric (including heat pump)	0.93 - (.00132 x V)
Oil	0.59 - (.0019 x V)
where V = volume in gallons	

(2) See Section 1604.1(f) for energy efficiency standards for other water heaters.

(g) Pool Heaters

(1) Energy design standard for natural gas pool heaters. Natural gas pool heaters shall not be equipped with constant burning pilots.

(2) Energy design standard for all pool heaters. All pool heaters shall have a readily accessible on-off switch that is mounted on the outside of the heater and that allows shutting off the heater without adjusting the thermostat setting.

(3) See Section 1604.1(g) for energy efficiency standards for gas and oil pool heaters.

(4) There is no energy efficiency standard or energy design standard for heat pump pool heaters.

(h) Plumbing Fittings: tub spout diverters. The flow rate of all tub spout diverters shall be no greater than the values shown in Table H-2.

Table H-2

Plumbing Fittings	*Maximum Flow Rate*
Tub spout diverters	
when new	0.1 gpm at 80 psi
after 15,000 cycles of diverting	0.3 gpm at 80 psi

(2) See Section 1604.1(h) for energy efficiency standards for showerheads and faucets.

(i) Plumbing Fixtures.

See Section 1604.1(i) for energy efficiency standards for plumbing fixtures.

(j) Fluorescent Lamp Ballasts.

See Section 1604.1(j) for energy efficiency standards for fluorescent lamp ballasts.

(k) Lamps

See Section 1604.1(k) for energy efficiency standards for lamps.

(l) Dishwashers

See Section 1604.1(l) for energy efficiency standards for dishwashers.

(m) Clothes Washers

See Section 1604.1(m) for energy efficiency standards and design standards for clothes washers.

(n) Clothes Dryers

See Section 1604.1(n) for energy efficiency standards for clothes dryers.

(o) Kitchen Ranges and Ovens

See Section 1604.1(o) for design standards for kitchen ranges and ovens.

(p) Television Sets

1604.2 Non-Federally-Regulated Appliances – Sale and Installation Standards

There are no efficiency standards or design standards for television sets.

(q) Electric Motors

See Section 1604.1(q) for energy efficiency standards for electric motors.

(r) Lighting Control Devices

See Section 1604.3(r) for design standards for lighting control devices.

(s) Demand Ventilation Control Devices

See Section 1604.3(s) for design standards for demand ventilation control devices.

§ 1604.3. Non-federally-regulated appliances; standards applicable only to Title 24 construction (California enforcement).

These standards are exclusively state law. No appliance within the scope of this section shall be installed in Title 24 construction unless, pursuant to section 1605, the manufacturer has certified that the appliance complies with the standards listed in this section and the appliance is listed in the appropriate database. The standards in this section are enforced by the Commission and local building departments.

In addition, no appliance within the scope of this section shall be installed in Title 24 construction, unless the manufacturer has (1) tested it as required by section 1603 and (2) marked it as required by section 1606.

(a) Refrigerators, Refrigerator-freezers and Freezers.

See Sections 1604.1(a) and 1604.2(a) for energy efficiency standards for refrigerators, refrigerator-freezers and freezers.

(b) Room air conditioners, room air conditioning heat pumps, packaged terminal air conditioners, and packaged terminal heat pumps.

See Sections 1604.1(b) and 1604.2(b) for energy efficiency standards for room air conditioners, room air conditioning heat pumps, packaged terminal air conditioners, and packaged terminal heat pumps.

(c) Central Air Conditioners: Unitary Air Conditioners and Heat Pumps > 135,000 Btu/hour; Heat Pumps with Supplementary Electric Resistance Heaters; Water-Chilling Packages.

(1) Efficiency standards for Unitary Air Conditioners and Heat Pumps > 135,000 Btu/hour; Water-Chilling Packages. The efficiency of unitary air conditioners and heat pumps > 135,000 Btu/hour, and water-chilling packages, shall be not less than the values shown in Table C-7.

Table C-7

Equipment Type	*Size Category*	*Subcategory Or Rating Condition*	*Efficiency Requirement*
Unitary air conditioners, air cooled	> 240,000 < 760,000 Btu/hr.	—	8.5 EER 7.5 IPLV
	> 760,000 Btu/hr.	—	8.2 EER 7.5 IPLV
Unitary air conditioners, water or evaporatively cooled	> 240,000 Btu/hr.	—	9.6 EER 9.0 IPLV
Condensing units, air cooled	> 135,000 Btu/hr.	—	9.9 EER 11.0 IPLV
Condensing units, water or evaporatively cooled	> 135,000 Btu/hr.	—	12.9 EER 12.9 IPLV
Water cooled water chilling packages	< 150 tons	—	3.8 COP 3.9 IPLV
	> 150 < 300 tons	—	4.2 COP 4.5 IPLV
	> 300 tons	With CFC refrigerants with ozone-depletion factors greater than those for R-22	5.2 COP 5.3 IPLV
		All others	4.7 COP 4.8 IPLV
Air cooled water chilling Packages	< 150 tons	With condenser	2.7 COP 2.8 IPLV
	> 150 tons	With condenser	2.5 COP 2.5 IPLV
	All sizes	Without condenser	3.1 COP 3.2 IPLV

(2) Design Standard: Controls for Heat Pumps with Supplementary Electric Resistance Heaters. Heat pumps with supplementary electric resistance heaters shall have controls:

A. That prevent supplementary heater operation when the heating load can be met by the heat pump alone; and

B. In which the cut-on temperature for compression heating is higher than the cut-on temperature for supplementary heating, and the cut-off temperature for compression heating is higher than the cut-off temperature for supplementary heating.

EXCEPTION: The controls may allow supplementary heater operation during:

A. Defrost; and

B. Transient periods such as start-ups and following room thermostat setpoint advance, if the controls provide preferential rate control, intelligent recovery, staging, ramping or another control mechanism designed to preclude the unnecessary operation of supplementary heating.

See also Sections 1604.1(c) and 1604.2(c) for energy efficiency standards for other central air conditioners

(d) Spot Air Conditioners.

There is no energy efficiency standard or design standard for spot air conditioners.

(e) Gas and Oil Space Heaters.

See Sections 1604.1(e) and 1604.2(e) for energy efficiency standards for other gas and oil space heaters.

(f) Water Heaters.

See Sections 1604.1(f) and 1604.2(f) for energy efficiency standards for water heaters.

(g) Pool Heaters

See Section 1604.1(g) and 1604.2(g) for energy efficiency and design standards for pool heaters.

(h) Plumbing Fittings.

See Sections 1604.1(h) and 1604.2(h) for energy efficiency standards for plumbing fittings.

(i) Plumbing Fixtures.

See Section 1604.1(i) for energy efficiency standards for plumbing fixtures.

(j) Fluorescent Lamp Ballasts.

See Section 1604.1(j) for energy efficiency standards for fluorescent lamp ballasts.

(k)Lamps

See Section 1604.1(k) for energy efficiency standards for lamps.

(l) Dishwashers

See Section 1604.1(l) for energy efficiency standards for dishwashers.

(m)Clothes Washers

See Section 1604.1(m) for energy efficiency and design standards for clothes washers.

(n) Clothes Dryers

See Section 1604.1(n) for energy efficiency standards for clothes dryers.

(o) Kitchen Ranges and Ovens

See Section 1604.1(o) for design standards for gas kitchen ranges and ovens.

(p) Television Sets

There are no efficiency standards or design standards for television sets.

(q) Electric Motors

See Section 1604.1(q) for energy efficiency standards for electric motors.

(r) Lighting Control Devices

The standards for automatic time switch control devices, occupant-sensing devices, automatic daylighting control devices, lumen maintenance control devices, and interior photocell sensor devices are as follows:

(1)All Devices: Instructions for Installation and Calibration. The manufacturer shall provide step-by-step instructions for installation and start-up calibration of the device.

(2) All Devices: Status Signal. The device shall have an indicator that visibly or audibly informs the device operator that it is operating properly, or that it has failed or malfunctioned.

EXCEPTION : Photocell sensors or other devices where a status signal is infeasible because of inadequate power.

(3) Automatic Time Switch Control Devices. Automatic time switch control devices shall:

(A) Be capable of programming different schedules for weekdays and weekends; and

(B) Have program backup capabilities that prevent the loss of the device's program and time setting for at least 10 hours if power is interrupted.

(4) Occupant-sensing Devices. Occupant-sensing devices shall be capable of automatically turning off all the lights in an area no more than 30 minutes after the area has been vacated. In addition, ultrasonic and microwave devices shall have a built-in mechanism that allows calibration of the

sensitivity of the device to room movement in order to reduce the false sensing of occupants, and shall comply with either Item 1 or 2 below, as applicable:

(A) If the device emits ultrasonic radiation as a signal for sensing occupants within an area, the device shall:

(i) Have had a Radiation Safety Abbreviated Report submitted to the Center for Devices and Radiological Health, Federal Food and Drug Administration, under 21 Code of Federal Regulations, Section 1002.12 (1996), and a copy of the report shall have been submitted to the California Energy Commission; and

(i) Emit no audible sound; and

(ii) Not emit ultrasound in excess of the following decibel (dB) values, measured no more than five feet from the source, on axis:

MIDFREQUENCY OF SOUND PRESSURE THIRD-OCTAVE BAND (in kHz)	**MAXIMUM dB LEVEL WITHIN THIRD-OCTAVE BAND (in dB reference 20 micropascals)**
Less than 20	80
20 or more to less than 25	105
25 or more to less than 31.5	110
31.5 or more	115

(C) If the device emits microwave radiation as a signal for sensing occupants within the area, the device shall:

(i) Comply with all applicable provisions in 47 Code of Federal Regulations, Parts 2 and 15 (1996), and have an approved Federal Communications Commission Identifier that appears on all units of the device and that has been submitted to the commission; and

(ii) Not emit radiation in excess of one milliwatt per square centimeter measured at no more than five centimeters from the emission surface of the device; and

(iii) Have permanently affixed to it installation instructions recommending that it be installed at least 12 inches from any area normally used by room occupants.

(5) Automatic Daylighting Control Devices. Automatic daylighting control devices shall:

(A) Be capable of reducing the light output of the general lighting of the controlled area by at least one half while maintaining a uniform level of illuminance throughout the area; and

(B) If the device is a dimmer, provide electrical outputs to lamps for reduced flicker operation through the dimming range and without causing premature lamp failure; and

(C) If the device is a stepped dimming system, incorporate time-delay circuits to prevent cycling of light level changes of less than three minutes; and

(D) If the device uses step switching with separate on and off settings for the steps, have sufficient separation (deadband) of on and off points to prevent cycling; and

(E) Have provided by the manufacturer step-by-step instructions for installation and start-up calibration to design footcandle levels.

(6) Lumen Maintenance Control Devices. Lumen maintenance control devices shall:

(A) Be capable of reducing the light output of the general lighting of the controlled area by at least 30 percent while maintaining a uniform illuminance throughout the area; and

(B) Provide electrical outputs to lamps for reduced flicker operation through the dimming range and without causing premature lamp failure; and

(C) Incorporate an alarm, either audible or visible, to announce when a specified setpoint has been reached; and

(D) Have provided by the manufacturer step-by-step instructions for installation and start-up calibration to design footcandle levels.

(7) Interior Photocell Sensor Devices. Interior photocell sensors shall not have a mechanical slide cover or other device that permits easy unauthorized disabling of the control, and shall not be incorporated into a wall-mounted occupant-sensing device.

(s) Demand Ventilation Control Devices

The standards for demand ventilation control devices are as follows:

(1) All Devices: Instructions for Installation and Calibration. The manufacturer shall provide step-by-step instructions for installation and start-up calibration of the device.

(2) All Devices: Status Signal. The device shall have an indicator that visibly or audibly informs the device operator that it is operating properly, or that it has failed or malfunctioned.

(3) Carbon dioxide demand ventilation control devices. Carbon dioxide demand ventilation control devices shall limit the carbon dioxide level to no more than 800 ppm while the space is occupied.

(4) Carbon dioxide demand ventilation control devices. Carbon dioxide demand ventilation control devices shall include supporting documentation describing how the device operates, the level of sensitivity of the device to volatile organic compounds, the method of testing the device, and how

the device is tested; and shall include the capability of being adjusted to provide the equivalent air quality in buildings as a building ventilated to the levels required by Table No. 1-F of Section 121(b)(2) of Part 6 of Title 24 of the California Code of Regulations.

~~**§1605. Constant Burning Pilots.**~~

~~(a) New gas appliances of the following types manufactured before the dates shown and all those that are not consumer products and were manufactured on or after the dates shown and all new gas pool heaters shall not be sold or offered for sale if they are equipped with constant burning pilots:~~

~~(1) Fan type central furnaces designed solely for installation in mobile homes (September 1, 1990)~~
~~(2) Other fan type central furnaces (January 1, 1992)~~
~~(3) Household cooking appliances (January 1, 1990)~~
~~(4) Fan type wall furnaces (January 1, 1990)~~
~~(5) Pool heaters~~

~~This restriction shall not apply to:~~

~~(1) Appliances designed to burn only liquefied petroleum gases~~
~~(2) Appliances designed expressly for use in mobile homes and recreational vehicles~~
~~(3) Cooking appliances which do not have an electrical line voltage supply connection~~

~~(b) A restriction on selling certain appliances with constant burning pilot is included in federal regulations for gas cooking appliances that are consumer products and that do not have an electrical line voltage supply connection.~~

§ 1605. Filing by Manufacturers; Listing of Models in Database.

(a) Filing of Statements for New or Modified Models.

Each manufacturer of any appliance within the scope of section 1601 shall file with the Executive Director a statement containing the following material at least 60 days before the sale, or offering for sale in California, or installation in Title 24 construction, of any new or modified model is begun.

(1) Manufacturer information.

(A) The name, address, and telephone number, and, if available, fax number, URL (website) address, and e-mail address, of the manufacturer.

(B) The name, address, and telephone number, and, if available, fax number and e-mail address, of the individual to contact concerning the statement and (if a different individual) of the individual signing the declaration pursuant to section 1605(a)(4).

(2) Appliance information.

(A) The type of appliance that the model is, according to the types of appliances listed in sections 1604.1, 1604.2, or 1604.3, or, if the model does not appear in one of those sections, section 1601.

(B) The brand name of the model.

(C) The model number as it appears on the appliance nameplate.

(3) Testing and performance information.

(A) A statement that the appliance model has been tested in accordance with all applicable requirements of section 1603.

(B) The name, address, and telephone number, and, if available, fax number, URL (website) address, and e-mail address, of the laboratory or other institution where the testing of the model was performed.

(C) The dates of the testing of the model.

(D) The test reports upon which the manufacturer relies in filing energy performance information pursuant to paragraph (E) of this subsection; provided, however, that the manufacturer is not required to provide the test reports as part of the statement if the Executive Director determines that, for the model at issue, a certification program exists for that product that includes provisions for verification and challenge of equipment efficiency ratings, and that the model is included in that program.

(E) The applicable form (incorporated by reference) in Table T, and the information required thereby, including but not limited to the model's energy efficiency, consumption, rating, or other energy performance.

Table T

Number	Date	*Title*
CEC 88	Sep 1999	Refrigerator and Freezer Certification Form
CEC 150	Sep 1999	Commercial Refrigerator and Freezer Certification Form (Including vending machines)
CEC 96	Sep 1999	Room Air Conditioner Certification Form (Including packaged terminal units)
CEC 93	Sep 1999	Central Air Conditioner and Heat Pump Certification Form
CEC 151	Sep 1999	Computer Room Air Conditioner Certification Form
CEC 165	Sep 1999	Spot Air Conditioner Certification Form
CEC 92	Sep 1999	Gas and Oil Fan Type Central Furnace Certification Form
CEC 94a	Sep 1999	Gas Gravity Type Wall and Floor Furnace, Room Heater, Unit Heater and Duct Furnace Certification Form
CEC 94b	Sep 1999	Gas Fan Type Wall and Floor Furnace Certification Form
CEC 97	Sep 1999	Boiler Certification Form
CEC 89a	Sep 1999	Small Gas or Oil Storage Type Water Heater Certification Form
CEC 89b	Sep 1999	Large Gas or Oil Storage Type Water Heater Certification Form
CEC 89d	Sep 1999	Small Gas or Oil Instantaneous Type Water Heater Certification Form
CEC 89e	Sep 1999	Large Gas or Oil Instantaneous Type Water Heater Certification Form
CEC 90a	Sep 1999	Small Electric Storage Type and Heat Pump Type Water Heater Certification Form
		Large Electric Storage Type Water Heater Certification Form
CEC 90b	Sep 1999	Plumbing Fixture and Fittings Certification Form
CEC 95	Sep 1999	Fluorescent Ballast Certification Form
CEC 111	Sep 1999	Fluorescent Lamp and Incandescent Reflector Lamp Certification Form
CEC 192	Sep 1999	Pool Heater Certification Form
CEC 181	Sep 1999	Dishwasher, Clothes Washer, Clothes Dryer, Range and Oven Certification Form
CEC 183	Sep 1999	Television Set Certification Form
CEC 193	Sep 1999	Electric Motor Certification Form
CEC 191	Sep 1999	

(4) Declaration.

(A) Each statement shall include a declaration, executed under penalty of perjury, that (1) all the information provided in the statement is true, complete, and accurate, and is in compliance with all applicable provisions of these regulations; (2) if the statement is being filed electronically, that the requirements of Section 1605(i) have been and are being complied with; and (3) for appliances for which there is an energy efficiency or energy design standard in Section 1604.1, 1604.2, or 1604.3, that the appliance model complies with the applicable standards.

(B) If the manufacturer is a corporation, partnership, or other business entity, the declaration shall be signed by an individual authorized to make the declaration and file the statement on behalf of the business entity, and the declaration shall contain an affirmation that the individual signing is so authorized.

(b) Modification of Statements.

The manufacturer shall file a modified statement containing the information shown under "Description of Model" on the appropriate form (referenced in Table T) and all other information being modified, within 10 days after any of the information in the most recent previously-filed statement has changed, including but not limited to cessation of sale or manufacture of a model.

(c) Review of Statements by Executive Director.

Within 45 days after receipt of a statement under section 1605(a) or 1605(b), the Executive Director shall determine whether the statement is complete and accurate on its face, including but not limited to a determination of whether any declaration required by Section 1605(a)(4) has been received, and shall inform the manufacturer of his or her determination. If the Executive Director determines that the statement is not complete and accurate on its face, he or she shall explain what is necessary to remedy the defects and ask the manufacturer to provide supplemental information to remedy such defects. If the Executive Director determines that the statement is complete and accurate on its face, he or she shall cause the model to be included in the database established pursuant to section 1605(d), which shall thereby authorize the sale and offering for sale or installation in Title 24 construction, as applicable of the model pursuant to section 25402(c)(1) of the Public Resources Code and section 1607 of these regulations. If the Executive Director does not inform the manufacturer within 45 days after receipt of the statement or after receipt of supplemental information, the statement shall be deemed complete and accurate on its face and the model shall be included in the database.

(d) Database of Appliance Models.

(1) Creation of database. The Executive Director shall create and maintain a database of information on all models for which complete and accurate statements have been received

pursuant to section 1605(a) or 1605(b), and which have not been

removed from the database pursuant to sections 1605(e), 1605(f), 1605(g), or 1608(c).

(2) Status of database. The database is a directory published by the Commission within the meaning of Title 24, California Code of Regulations, Part 6, section 100(g).

(e) Annual Confirmation of Database Listings.

Annually, and more often if reasonably necessary, the Executive Director shall, by writing via certified mail to the most recent address filed pursuant to section 1605(a)(1)(B), request each manufacturer of a model listed in the database to confirm the validity, or to correct, all of the information in each of its database listings, including but not limited to the model's compliance with any applicable standard adopted since the most recent filing by the manufacturer. If, within 30 days after the mailing, there is any model for which the Executive Director has not received a reply from the manufacturer that confirms the validity of, or corrects, all of the information in the database listing for that model, the model shall be removed from the database.

(f) Assessment of Completeness and Accuracy of Manufacturer Statements.

Notwithstanding any other provision of these regulations, the Executive Director may at any time challenge the completeness and accuracy, and compliance with the requirements of this section, of any statement filed pursuant to this section. If the statement is on its face incomplete or inaccurate, or if the Executive Director determines that the statement otherwise fails to comply with any of the requirements of this section, then he or she shall, ten days after providing written notice by certified mail to the person designated in 1605(a)(1)(B), remove the model from the database.

(g) Discontinued Models.

Within 10 days after any model has ceased being sold or offered for sale in California, the manufacturer shall file a statement so stating and containing the information required by sections 1605(a)(1), (2), and (4). Immediately upon receipt of such a statement, the Executive Director shall remove the model from the database.

(h) Filing by Third Parties.

A third party may file on behalf of a manufacturer the information required by sections 1605(a)(1)-(3), 1605(b), 1605(e), or 1605(g) if:

(1) the manufacturer submits to the third party:

(A) the information that is required;

(B) a declaration under penalty of perjury, and where applicable pursuant to section 1605(a)(4)(B), that the information is true, complete, accurate, and in compliance with all applicable provisions of these regulations, and, for appliances for which there is an energy efficiency or energy design standard in Section 1604.1, 1604.2, or 1604.3, that the appliance model complies with the applicable standards; and

(C) an authorization, filed with both the third party and the Commission, for the third party to submit the information to the Commission on behalf of the manufacturer;

(2) the third party submits to the Commission:

(A) the information that is required, including but not limited to the model number as it appears on the appliance nameplate for every model for which information is submitted, provided that the third party shall not submit any information on an appliance model that is already in the database and for which there are no changes in the present submittal;

(B) an indication of additions, changes, and deletions for appliance models that are already in the database;

(C) a declaration under penalty of perjury, and where applicable pursuant to section 1605(a)(4)(B), that:

(i) to the best of the third party's knowledge and belief, the information is the same as the information submitted by the manufacturer to the third party; the information is true, complete, accurate, and in compliance with all applicable provisions of these regulations; and, for appliances for which there is an energy efficiency or energy design standard in Section 1604.1, 1604.2, or 1604.3, the appliance model complies with the applicable standards; and

(ii) the requirements of paragraphs (3) and (4) of this subsection are met;

(3) the third party has an agreement with the manufacturer that allows the third party to challenge the truth, accuracy, and completeness of information submitted by the manufacturer to the third party and to refuse to submit to the Commission information that the third party believes is not truthful, accurate, or complete; and

(4) the third party provides, upon ten days' written notice from the Executive Director, all information provided by the manufacturer and all information relating to any challenges pursuant to paragraph (3) of this subsection.

Whether a manufacturer files information required by this section by itself or via a third party, the manufacturer remains responsible for the truth, accuracy, completeness, and timeliness of all required submittals.

At any time the Executive Director may forbid a third party from making filings and may remove affected appliance models from the database if he or she finds that the criteria in this subsection are not being met.

The provisions of section 1608 are applicable to all submittals and filings, whether made by a manufacturer directly or by a third party on behalf of a manufacturer.

(i) Electronic filing.

(1) The statements and information required by sections 1605(a)(1)-(4), 1605(b), 1605(e), or 1605(g), or allowed by sections 1605(h), may be filed electronically by a manufacturer, or by a third party pursuant to section 1605(h), if:

(A) the electronic filing uses a format approved by the Executive Director;

(B) within three days of the electronic filing being made, an exact paper copy of all declarations required by section 1605(a)(4), 1605(h)(1)(B), or 1605(h)(2)(C) is executed by a person authorized under the appropriate section to execute it and is attached to an exact paper copy of the information submitted;

(C) for two years from the date of filing the person making the filing keeps the exact paper copies required by paragraph (B) of this subsection for two years from the date of filing and provides those copies to the Executive Director upon ten days' written request.

(2) Any electronic filing constitutes a representation by the person making the filing that all applicable requirements of these regulations have been and will continue to be met.

At any time the Executive Director may forbid electronic filings by any person, or generically, and may remove affected appliance models from the database, if he or she finds that the criteria in this subsection are not being met.

(j) Third-Party Directories.

A directory, or a part thereof, published by a person other than the Commission may be used for any purpose that the database established pursuant to section 1605(d) is used for, if the Executive Director determines that:

(1) All of the requirements of sections 1605(h)(1), 1605(h)(2)(C), 1605(h)(3), and 1605(h)(4) for third party submittals are met for the directory;

(2) For appliances that are listed in one of the following directories, the directory contains all of the information contained therein:

ARI – Unitary Directory – Effective January 1, 1999 – June 30, 1999
- Section AC (both Split System and Single Package)
- Section HP (both Split System and Single Package)

ARI – Applied Directory – Effective January 1, 1999 – June 30, 1999
- Sections GSHP, GWHP, PTAC, PTHP, ULE and WSHP

GAMA – Consumers' Directory of Certified Efficiency Ratings – April 1999
- Chapter I: Gas and Oil Central Heating Equipment
  - Section 1: Gas Furnaces
  - Section 2: Oil Furnaces
  - Section 3: Gas Boilers
  - Section 4: Oil Boilers
- Chapter III: Gas, Oil, Electric and Combination Water Heaters
  - Section 1: Gas Water Heaters
  - Section 2: Oil Water Heaters
  - Section 3: Electric Water Heaters
  - Section 4: Heat Pump Water Heaters with Tank
  - Section 5: Heat Pump Water Heaters without Tank;

(3) The directory contains no model that fails to meet an applicable energy efficiency or energy design standard established in or pursuant to NAECA or EPAct, or an applicable requirement of this article (including but not limited to Section 1604.1, 1604.2, or 1604.3), whether the model fails because it does not meet the applicable standard or requirement, because the manufacturer has stated or certified that the model meets a standard not applicable to it, or because of another reason;

(4) Each directory contains the following statement, in at least **[20?]** point bolded type, on the front cover or first page:

"This directory (insert parts if appropriate) has been approved by the California Energy Commission (Commission) for determining compliance with its appliance efficiency regulations (Title 24, California Code of Regulations, Sections 1601-1608). Unless indicated otherwise, any model listed in this directory (insert parts if appropriate) may be sold or installed in new construction in California. Models made by manufacturers who participate in this directory but have not given authorization for data submittal to the Commission cannot use this directory for determining compliance with the Commission's appliance efficiency regulations. For information about these models, models that are beyond the scope of this directory, or models produced by manufacturers who do not

participate in this directory, please contact the Commission's Building Standards Hotline at 916-654-5106, 800-772-3300 (in California only), or ***{insert e-mail or website address}***."; and

(5) Within 7 days of publication of a directory or supplement, the third party mails, at no cost to recipients, a copy of the directory or supplement to the Executive Director and to all California building officials as specified by the Executive Director, and provides a list of the building officials to whom the directory or supplement was sent to the Executive Director.

If the Executive Director at any time determines that any of the provisions of this subsection or any other applicable provision of law is not complied with, upon written notice from the Executive Director the third party shall immediately remove from the directory any model designated by the Executive Director and shall immediately indicate in the directory that such model cannot be sold or offered for sale in California or installed in Title 24 construction. The model shall be removed, or so indicated in the directory, for a period of at least sixty days, until the end of a proceeding held to consider the matter pursuant to Sections 11445.10-11445.60 of the Government Code (or, at the third party or affected manufacturer's option, pursuant to Sections 11425.10-11425.60 of the Government Code).

§1606. Certification.

(a) No new appliance described in subsections 1601(a) through (h), which was manufactured on or after the effective dates listed in section 1604, shall be sold or offered for sale in California, which is not certified by its manufacturer to be in compliance with the provisions of these regulations. For the following types of appliance, this requirement applies only to those which are not consumer products:

(1) refrigerators, refrigerator-freezers and freezers
(2) room air conditioners
(3) wall furnaces, floor furnaces and room heaters
(4) water heaters
(5) fluorescent lamp ballasts

(b) The manufacturer (manufacturer, private brand packager or reassembler in the case of plumbing fittings) shall submit a certification statement to the executive director for each model, containing the following information, except as provided in subsections (c) and (d):

(1) Name and address of manufacturer.
(2) Type of appliance.
(3) Brand name.
(4) Model number, as it appears on the appliance name plate.
(5) Name and address of laboratory where test for efficiency was performed.
(6) Date of test for efficiency.
(7) Information on the applicable form in Table J (incorporated by reference).

Table J

Number	*Date*	*Title*
CEC 88	Dec 1989	Refrigerator and Freezer Certification Form
CEC 150	Sept 1988	Commercial Refrigerator and Freezer Certification Form
CEC 96	Dec 1989	Room Air Conditioner Certification Form
CEC 93	Nov 1986	Central Air Conditioner and Heat Pump Certification Form
CEC 151	Aug 1989	Computer Room Air Conditioner Certification Form
CEC 165	Dec 1989	Spot Air Conditioner Certification Form
CEC 92	Feb 1987	Gas and Oil Fan Type Central Furnace Certification Form
CEC 94a	Dec 1989	Gas Gravity Type Wall and Floor Furnace, Room Heater, Unit Heater and Duct Furnace Certification Form
CEC 94b	Dec 1989	Gas Fan Type Wall and Floor Furnace Certification Form
CEC 97	Jan 1987	Boiler Certification Form
CEC 89a	Dec 1989	Small Gas or Oil Storage Type Water Heater Certification Form
CEC 89b	May 1987	Large Gas or Oil Storage Type Water Heater Certification Form
CEC 89d	Dec 1989	Small Gas or Oil Instantaneous Type Water Heater Certification Form
CEC 89e	Dec 1989	Large Gas or Oil Instantaneous Type Water Heater Certification Form
CEC 90a	Dec 1989	Small Electric Storage Type Water Heater Certification Form
CEC 90b	May 1987	Large Electric Storage Type Water Heater Certification Form
CEC 90e	Dec 1988	Supplemental Electric Heat Pump Water Heater Form
CEC 95	Oct 1986	Plumbing Fittings Certification Form
CEC 111	Dec 1989	Fluorescent Ballast Certification Form
CEC 118	Apr 1987	Luminaire Certification Form

(8) Sufficient information about the model number or other identification by which the date of manufacture can be readily ascertained.

(9) For refrigerators, refrigerator-freezers and freezers certified under 1601(a)(6); large storage-type water heaters; and plumbing fittings: a test report from a laboratory approved by the executive director.

(10) A declaration that the appliance model complies with sections 1601-1608 of Title 20 of the California Code of Regulations; provided, however, that this requirement does not apply to any of the following types of appliance which are consumer products:

(A) refrigerators, refrigerator freezers and freezers
(B) room air conditioners
(C) wall furnaces, floor furnaces and room heaters
(D) water heaters
(E) fluorescent lamp ballasts

(c) In lieu of submitting to the Commission the detailed information specified in Subsection 1606(b), a manufacturer, private brand packager, or reassembler of plumbing fittings may submit the same or similar information to an industry or governmental certification agency, providing that the certification agency meets the following criteria:

The agency must conduct a testing, listing, and labeling program for the type of plumbing fitting involved.

The managing committee of the program must include persons representing manufacturers of plumbing fittings, users of plumbing fittings, and general interest.

The formal procedures of the program must include means of obtaining consensus (as defined by the American National Standards Institute) on all aspects of the program. They must also include formal procedures for appealing any action or inaction of the program.

The agency must agree to allow a representative of the Commission to participate in managing committee meetings and witness testing if so requested.

The agency must agree to make available to the Commission adequate data for the Commission to publish directories of plumbing fittings which comply with the requirements of these regulations.

The agency must also agree to take action to follow up individual complaints of inaccurate listing of plumbing fittings within 30 days.

Any application from an agency claiming to meet the criteria of this subsection shall be the subject of a public hearing before being ruled upon by the executive director.

(d) The manufacturer of luminaires of the type described in subsection 1601(i) shall submit a certification statement to the executive director, containing a statement that only luminaires which

~~contain ballasts whose performance has been certified to the U.S. Department of Energy will be sold or offered for sale in California.~~

~~(e) Every certification statement shall be dated and signed by the manufacturer (the manufacturer, private brand packager or reassembler in the case of plumbing fittings) attesting to its truth and accuracy under penalty of perjury. Where the manufacturer is either a corporation or a business association, the certification statement shall be dated, signed and attested to by an officer thereof.~~

~~(f) Within 45 days after receipt of a certification statement, the Executive Director shall forward to the manufacturer (the manufacturer, private brand packager, or reassembler in the case of plumbing fittings) an acknowledgement that the statement has been received and stating whether it is complete and accurate on its face.~~

~~For purposes of subsection (a), certification of a model shall be deemed to occur upon forwarding of the acknowledgement by the Executive Director. If acknowledgement is not forwarded in a timely manner, certification shall be deemed to occur on the 45th day after receipt of the certification statement.~~

~~(g) Lavatory faucets and sink faucets which are certified to comply with the provisions of these regulations when flow restricting aerators are attached, shall only be sold with the flow restricting aerators attached.~~

§ 1606. Marking of Appliances

(a) All Appliances: Manufacturer's Name or Brand Name, Model Number, Date of Manufacture. The manufacturer's name or brand name, and the date of manufacture shall be permanently and legibly displayed on an accessible place on each unit. The model number shall be permanently and legibly displayed on the nameplate.

(b) Federally-Regulated Consumer Products: Labeling Provisions. The marking required by the regulations of the Federal Trade Commission in 16 Code of Federal Regulations Part 305 shall be displayed on all federally-regulated consumer products of the following classes:

Refrigerators
Refrigerator-Freezers
Freezers
Central air conditioners
Heat pumps
Dishwashers
Water heaters
Room air conditioners
Warm air furnaces
Boilers

Pool heaters
Clothes washers
Fluorescent lamp ballasts
Showerheads
Faucets
Toilets
Urinals
General service fluorescent lamps
Incandescent reflector lamps

(c) Federally-Regulated Commercial and Industrial Equipment: Energy Performance. Appliances listed in Table U which are federally-regulated and industrial equipment shall also be marked, permanently and legibly on an accessible place on each unit, and also on printed matter which is displayed or distributed at the point of sale, with the energy performance information shown in Table U.

Table U

Class	*Energy Performance Information*
Split system central air conditioners	Rated cooling capacity, EER (on printed material only)
Single package central air conditioners	Rated cooling capacity, EER
Split system heat pumps	Rated cooling capacity, rated heating capacity, EER, COP (on printed material only)
Single package heat pumps	Rated cooling capacity, rated heating capacity, EER, COP
Package terminal air conditioners	Rated cooling capacity, EER
Package terminal heat pumps	Rated cooling capacity, rated heating capacity, EER, COP
Warm air furnaces	Rated input, thermal efficiency, combustion efficiency
Packaged boilers	Rated input, thermal efficiency, combustion efficiency
Water heaters	Rated input, rated storage volume, measured storage volume, thermal efficiency, standby loss
Hot water supply boilers	Rated input, rated storage volume, measured storage volume, thermal efficiency, standby loss

~~**§1607. Identification of Complying Appliances.**~~

~~(a) Sufficient information shall be shown on the outside of the shipping carton for any appliance described in subsections 1601(a) through 1601(i) (and unit carton in the case of plumbing fittings) to permit the determination of whether the appliance complies with the requirements of this article.~~

(b) The markings shown in Table G-2, or the actual tested flow rate, or other marking approved by the Executive Director, shall additionally be marked conspicuously on each plumbing fitting except metering faucets sold or offered for sale either by means of a permanent marking on the fitting or on a label attached to the fitting, and also upon the unit carton in which the fitting is offered for retail sale.

Table G-2

Effective date	*Fitting type*	*Marking*
Through April 19, 1999	Showerheads and faucets	3.0 gpm max
April 20, 1992	Showerheads Faucets	2.5 gpm max 2.2 gpm max

(c) The executive director or his designee may require additional information if necessary to permit determination of compliance.

(d) The manufacturer's name or brand name shall appear on each appliance.

(e) Any appliance described in subsections 1601(a) through (h), excluding (g), which is manufactured on or after July 1, 1984, and for which section 1604 specifies an effective date that is prior to July 1, 1984, may not be sold or offered for sale unless the date of manufacture is permanently displayed in an accessible place on that appliance.

(f) Any appliance described in subsections 1601(a) through (h), excluding (g), which is manufactured on or after July 1, 1984, and for which Section 1604 specifies an effective date that is subsequent to July 1, 1984, may not be sold or offered for sale unless the month and year of manufacture, or the week and year if identified as such on the appliance, is permanently displayed in an accessible place on that appliance.

(g) An accessible place is a place that can be easily seen without the need for tools to remove any covering when the appliance is on display in a store or when it is installed.

(h) Large water heaters that comply with the standards in Table F-3 shall be marked on the nameplate "Complies with the requirements of Addendum 90.1b to ASHRAE/IES 90.1-1989." Other large water heaters that comply with the standards in Table F-2 shall be marked on the nameplate "Complies with the 1989 requirements of ASHRAE/IES 90.1-1989".

§ 1607. Requirements for Sale, Offering for Sale, and Installation in New Construction.

(a) General Requirements. Except as provided in subsections (b) and (c), any appliance model within the scope of section 1601 may be sold or offered for sale in California, or installed in Title 24 construction, only if:

(1) the model appears in the most recent database established pursuant to section 1605(d); and

(2) the manufacturer has:

(A) tested the model as required by section 1603;

(B) marked all units of the model as required by section 1606; and

(C) for any model for which there is a standard established under section 1604.1, 1604.2, and 1604.3, certified pursuant to section 1605(a)(4) that the model meets the applicable standard.

(D) for all models, the manufacturer has reported the energy performance of the model to the building official or other person having the authority to grant a permit for the Title 24 construction in which the model will be installed.

(b) Models for Which There is a Standard in Section 1604.3. Except as provided in subsection (c), models for which there is a standard in Section 1604.3 may be installed in Title 24 construction only if:

(1) for unitary products 240,000 Btu/hour and greater, the manufacturer has:

(A) tested the model as required by section 1603;

(B) marked all units of the model as required by section 1606; and

(2) for condensing units, the manufacturer has:

(A) tested the model as required by section 1603;

(B) marked all units of the model as required by section 1606; and

(c) Lighting Control Devices and Demand Ventilation Control Devices. Lighting control devices and demand ventilation control devices may be installed in Title 24 construction only if:

(1) the model appears in the most recent database established pursuant to section 1605(d); and

(2) the manufacturer has:

(A) marked all units of the model as required by section 1606; and

(B) certified pursuant to section 1605(a)(4) that the model meets the applicable standard in section 1604.3.

~~**§1608. Enforcement.**~~

~~(a) The executive director shall cause periodic inspections to be made of manufacturers, distributors or retailers of the new appliances described in section 1601, including appliances that have been or are to be installed by contractors or builders at building sites, in order to determine their compliance with these regulations.~~

~~(b) Notwithstanding the provisions of section 1606 of these regulations, the executive director shall have authority to challenge the efficiency test results provided by the manufacturer, private brand packager, or reassembler and cause the appliance model to be retested at any voltage for which it is labeled. The executive director shall also have authority to test refrigerators, refrigerator-freezers, freezers, large storage-type water heaters, and plumbing fittings being offered for sale in California whose performance has not been certified by the manufacturer.~~

~~(c) The test would involve one unit selected by the executive director.~~

~~(1) If the performance of the appliance falls within the tolerances listed below, no further action is necessary, and the Commission will pay the cost of testing.~~

~~Table K~~

~~*Appliance*~~	~~*Characteristic*~~	~~*Tolerance Limits (percent of certified value)*~~
~~Refrigerators, refrigerator-freezers, freezers~~	~~Volume~~ ~~Energy consumption~~	~~Not less than 98.5 percent~~ ~~Not more than 110 percent~~
~~Room air conditioners (including heat pumps and packaged terminal air conditioners)~~	~~Cooling capacity~~ ~~Energy consumption when cooling~~ ~~Heating capacity~~ ~~Energy consumption when heating~~	~~Not less than 95 percent~~ ~~Not more than 110 percent~~ ~~Not less than 95 percent~~ ~~Not more than 110 percent~~
~~Central air conditioners (including heat pumps)~~	~~Cooling capacity~~ ~~Energy efficiency ratio~~ ~~Seasonal energy efficiency ratio~~	~~Not less than 95 percent~~ ~~Not less than 95 percent~~ ~~Not less than 95 percent~~
~~Central air conditioning heat pumps, when heating~~	~~Heating capacity~~ ~~Coefficient of performance~~ ~~Heating seasonal~~	~~Not less than 95 percent~~ ~~Not less than 95 percent~~

	performance factor	Not less than 95 percent
Central gas furnaces	Seasonal efficiency Steady state efficiency	Not less than 95 percent Not less than 100 percent
Other gas space heaters	Seasonal efficiency Annual fuel utilization efficiency Thermal efficiency Energy consumption during standby	Not less than 95 percent Not less than 95 percent Not less than 100 percent Not more than 100 percent
Small water heaters	Energy factor Recovery efficiency Standby loss	Not less than 100 percent Not less than 97.5 percent Not more than 115 percent
Large water heaters	Thermal efficiency Standby loss	Not less than 100 percent Not more than 100 percent
Plumbing fittings (through 1991) (effective 1992)	 Water flow rate Water flow rate	 Not more than 110 percent Not more than 100 percent
Fluorescent lamp ballasts	Ballast efficacy Factor	Not less than 100 percent
Pool heaters	Thermal efficiency	Not less than 100 percent
Dishwashers	Energy factor	Not less than 100 percent
Clothes washers	Energy factor	Not less than 100 percent
Clothes dryers	Energy factor	Not less than 100 percent
Kitchen ranges and ovens	Energy factor	Not less than 100 percent

(2) If the performance of the appliance does not fall within the tolerances listed above, the manufacturer, private brand packager, or reassembler who submitted the certification form must pay the cost of testing and take whatever steps are necessary either to recertify the appliance at a lower efficiency rating or to provide information to the satisfaction of the executive director that:

(A) in the initial certification of the model, the method of selecting the test sample complied with the requirements of section 1603, and

(B) in the initial certification of the model, the value certified was in conformance with the requirements of section 1603.

Even if this information is provided, the manufacturer of appliances described in subsections 1601(a), 1601(b) and 1601(d) through (h) shall be required to test a second unit, selected by the executive director, in a laboratory acceptable to the executive director, at the manufacturer's expense. The mean of the results of the two tests shall be calculated.

~~(3) If the mean of the performance of the two units falls within the tolerances listed in subsection (c)(1), no further action will be taken. If the mean of the performance of the two units (or single unit in the case of an appliance described in subsection 1601(c)) does not fall within those tolerances, the certification for that model shall be suspended by Commission order. The cost of testing plumbing fittings which fail to meet the marking provisions but comply with all other requirements shall be paid by the person who sold the fitting.~~

~~(4) If any of the tests of units required by the executive director pursuant to this subsection are not undertaken by a manufacturer, the certification for that model shall be suspended by Commission order.~~

~~(5) Prior to issuing an order suspending certification of any model, the Commission shall hold a hearing under 20 California Code of Regulations sections 1230 et seq.~~

~~(6) The executive director shall have authority to test uncertified plumbing fittings being offered for sale in California which the manufacturer, packager, or reassembler has failed to certify to the Commission within 60 days of being notified by the executive director of the need for certification. The manufacturer, packager or reassembler, as appropriate, shall pay for this testing.~~

~~(7) The executive director shall have authority to test uncertified refrigerators, refrigerator-freezers, freezers, and large storage water heaters being offered for sale in California which the manufacturer has failed to certify to the Commission within 60 days of being notified by the executive director of the need for certification. The manufacturer shall pay for this testing.~~

§ 1608. Enforcement.

(a) Submittal of test reports.

Each manufacturer shall, within ten days of receipt of a written request from the Executive Director sent to one of the locations designated in section 1605(a)(1)(B), provide a copy of the test report that describes the results of the test performed pursuant to section 1603, and that provides the basis for the efficiency or consumption information submitted pursuant to section 1605(a)(3)(D), for any appliance model.

(1) If the Executive Director does not receive a copy of the test report within ten days of the manufacturer's receipt of the request, he or she shall make another request pursuant to section 1608(a). If the Executive Director does not receive a copy of the test report within ten days of the manufacturer's receipt of the second request, he or she shall remove the model from the database.

(2) If the test report indicates on its face that the energy consumption of the model is greater than, or the energy efficiency of the model is less than, the consumption or efficiency

certified by the manufacturer pursuant to section 1605(a)(3)(D), the Executive Director shall modify the listing of the model in the database to reflect accurately the test report.

(3) If the test report indicates on its face that the model does not comply with the applicable standard in Section 1604.1, 1604.2, or 1604.3, the Executive Director shall, ten days after providing written notice by certified mail to the person designated in section 1605(a)(1)(B), remove the model from the database.

(b) Inspection of appliances.

(1) The Executive Director shall periodically inspect appliances sold or offered for sale in the state, or installed or intended to be installed in Title 24 construction, to determine whether they conform with the applicable energy design standards of Sections 1604.1, 1604.2, and 1604.3 and with the applicable marking requirements of Section 1606.

(2) An inspection of a model shall consist of inspection of one unit.

(A) If the inspection indicates that the model complies with the applicable energy design standards and marking requirements, the matter shall be closed.

(B) If the inspection indicates that the model does not comply with an applicable energy design standard or marking requirement, the Commission shall undertake a proceeding pursuant to Sections 11445.10-11445.60 of the Government Code (or, at the manufacturer's option, pursuant to Sections 11425.10-11425.60 of the Government Code). If the Commission confirms the Executive Director's determination, then he or she shall remove the model from the database, thus making illegal the sale or offering for sale, or installation in Title 24 construction of the model.

(c) Testing of appliances.

The Executive Director shall periodically cause, at laboratories meeting the requirements of section 1603, the testing of appliance models sold or offered for sale in the state, or installed or intended to be installed in Title 24 construction, to determine whether they conform with the applicable energy efficiency standards in Sections 1604.1, 1604.2, and 1604.3, and to determine whether their conformance is as reported or certified by the manufacturer pursuant to Sections 1605(a)(3)(E) and 1605(a)(4). Testing shall be performed as follows:

(1) Initial test. The Executive Director shall perform one initial test, using the applicable test procedure specified in section 1603.

(A) Test shows performance is as required by standard and as certified by manufacturer. If the initial test result indicates that the energy consumption of the model is no greater than, or the energy efficiency of the model is no less than, the consumption or efficiency that is permitted or required by the applicable standard in Section 1604.1, 1604.2, or 1604.3, and that was reported or certified by the manufacturer pursuant to Sections 1605(a)(3)(E) and 1605(a)(4), the matter shall be closed.

(B) Test shows performance is not as required by standard or is not as certified by manufacturer. If the initial test result indicates that the energy consumption of the model is greater, or the energy efficiency of the model is less, than the consumption or efficiency that is permitted or required by the applicable standard in Section 1604.1, 1604.2, or 1604.3, or that was certified by the manufacturer pursuant to Sections 1605(a)(3)(E) and 1605(a)(4), the Executive Director shall perform a second test using the applicable test procedure specified in section 1603.

(2) Second test; mean of results. If a second test is performed, the Executive Director shall calculate the mean of the results of the initial test and the second test.

(A) Performance is as required by standard and as certified by manufacturer. If the mean of the two results indicates that the energy consumption of the model is no greater than, or the energy efficiency of the model is no less than, the consumption or efficiency permitted or required by the applicable standard in Section 1604.1, 1604.2, or 1604.3, and as reported or certified by the manufacturer pursuant to Sections 1605(a)(3)(E) and 1605(a)(4), the matter shall be closed.

(B) Performance is as required by standard but is not as reported or certified by manufacturer. If the mean of the two results indicates that the energy consumption of the model is greater, or the energy efficiency of the model is less, than the consumption or efficiency as reported or certified by the manufacturer pursuant to Sections 1605(a)(3)(E) and 1605(a)(4), but that the model nevertheless complies with the applicable standard in Section 1604.1, 1604.2, or 1604.3, the Commission shall undertake a proceeding pursuant to Sections 11445.10-11445.60 of the Government Code (or, at the manufacturer's option, pursuant to Sections 11425.10-11425.60 of the Government Code). If the Commission determines that that the energy consumption of the model is greater, or the energy efficiency of the model is less, than the consumption or efficiency as reported or certified by the manufacturer pursuant to Sections 1605(a)(3)(E) and 1605(a)(4), but that the model nevertheless complies with the applicable standard in Section 1604.1, 1604.2, or 1604.3, the Executive Director shall modify the listing of the model in the database to reflect accurately the Commission's determination.

(C) Performance is not as required by standard. If the mean of the two test results indicates that the model does not comply with the applicable standard in Section 1604.1, 1604.2, or 1604.3, the Commission shall undertake a proceeding pursuant to Sections 11445.10-11445.60 of the Government Code (or, at the manufacturer's option, Sections 11425.10-11425.60 of the Government Code). If the Commission determines that the model does not comply, the Executive Director shall remove the model from the database established pursuant to section 1605(d).

(3) Costs. All costs of initial tests showing results as described in section 1608(c)(1)(A) shall be borne by the Commission. All costs of all other tests shall be paid by the manufacturer.

(4) Federally-Regulated Appliances. If the appliance model tested is a federally-regulated consumer product or federally-regulated commercial and industrial equipment, in addition to the applicable actions described in Sections 1608(c)(1) and 1608(c)(2), the Executive Director shall inform the U.S. Department of Energy if the test results show that the model does not comply with the applicable federal standard.

ENERGY EFFICIENCY STANDARDS FOR
RESIDENTIAL AND NONRESIDENTIAL BUILDINGS

CALIFORNIA CODE OF REGULATIONS
TITLE 24, PART 6

Subchapter 2

All Occupancies—Mandatory Requirements For The Manufacture, Construction And

Installation Of Systems, Equipment And Building Components.

Section 110 – Systems And Equipment—General

Sections 111 through 119 establish requirements for the manufacture, construction, and installation of certain systems, equipment and building components that are installed in buildings regulated by Title 24, Part 6. Systems, equipment and building components listed below may be installed only if:

(a) The manufacturer has certified that the system, equipment or building component complies with the applicable manufacture provisions of Sections 111 through 119; ~~and~~

(b) The system, equipment or building component complies with the applicable installation provisions of Sections 111 through 119 ; and

(c) If the system, equipment, or building component is within the scope of the Appliance Efficiency Regulations, the system, equipment or building component and the manufacturer thereof comply with all the applicable requirements in those regulations.

No system, equipment or building component covered by the provisions of Sections 111 through 119 that is not certified or that fails to comply with the applicable installation requirements may be installed in a building regulated by Title 24, Part 6.

The systems, equipment and building components covered are:

Appliances regulated by the Appliance Efficiency Regulations (Section 111).
- 20 CCR 1601(a) refrigerators, refrigerator-freezers and freezers
- 20 CCR 1601(b) room air conditioners
- 20 CCR 1601(c) central air conditioners
- 20 CCR 1601(d) spot air conditioners
- 20 CCR 1601(e) gas space heaters
- 20 CCR 1601(f) water heaters
- 20 CCR 1601(g) pool heaters
- 20 CCR 1601(h) plumbing fittings
- 20 CCR 1601(i) plumbing fixtures
- 20 CCR 1601(j) fluorescent lamp ballasts
- 20 CCR 1601(k) lamps
- 20 CCR 1601(l) dishwashers
- 20 CCR 1601(m) clothes washers
- 20 CCR 1601(n) clothes dryers
- 20 CCR 1601(o) kitchen ranges and ovens
- 20 CCR 1601(p) television sets
- 20 CCR 1601(q) electric motors
- 20 CCR 1601(r) lighting control devices
- 20 CCR 1601(s) demand ventilation control devices

Other space-conditioning equipment (Section 112). (Reserved)
Other service water-heating systems and equipment (Section 113).
Pool and spa heating systems and equipment (Section 114).
Gas appliances (Section 115). (Reserved).
Doors, windows, and fenestration products (Section 116).
Joints and other openings (Section 117).
Insulation (Section 118).
Lighting control devices (Section 119).

SECTION 111 – MANDATORY REQUIREMENTS FOR APPLIANCES REGULATED BY THE APPLIANCE EFFICIENCY REGULATIONS

Any appliance for which there is a California standard established in that is within the scope of the Appliance Efficiency Regulations may be installed only if the appliance and the manufacturer thereof comply with all the applicable requirements in those regulations, including but not limited to the listing of

the appliance in a database approved by the Commission. ~~manufacturer has certified to the commission, as specified in those regulations, that the appliance complies with the applicable standard for that appliance.~~ See Appendix 1-A for availability of approved database ~~directories of certified appliances~~.

SECTION 112 (Reserved) ~~– MANDATORY REQUIREMENTS FOR SPACE CONDITIONING EQUIPMENT~~

~~**Certification by Manufacturers**. Any space conditioning equipment listed in this section may be installed only if the manufacturer has certified that the equipment complies with all the applicable requirements of this section.~~

~~(a) **Efficiency**. Equipment shall meet the applicable requirements of Table 1-C, subject to the following:~~

~~1. If more than one standard is listed in Table 1-C, the equipment shall meet all the standards listed; and~~

~~2. If more than one test method is listed in Table 1-C, the equipment shall comply with the applicable standard when tested with each test method; and~~

~~3. Where equipment can serve more than one function, such as both heating and cooling, or both space heating and water heating, it shall comply with all the requirements applicable to each function; and~~

~~4. Where a requirement is for equipment rated at its "maximum rated capacity" or "minimum rated capacity," the capacity shall be as provided for and allowed by the controls, during steady-state operation.~~

~~TABLE 1-C – EFFICIENCY REQUIREMENTS FOR SPACE-CONDITIONING EQUIPMENT~~

~~EQUIPMENT TYPE~~	~~SIZE CATEGORY~~	~~SUBCATEGORY OR RATING CONDITION~~	~~EFFICIENCY REQUIREMENT~~	~~WHEN TESTED WITH:~~
~~UNITARY AIR CONDITIONERS AND HEAT PUMPS, ELECTRICALLY OPERATED ≥ 135,000 BTU/HR.~~				
~~Air conditioners, air cooled~~	~~≥ 135,000 Btu/hr. and < 760,000 Btu/hr.~~	~~—~~	~~8.5 EER 7.5 IPLV~~	~~ARI 360-93~~
	~~≥ 760,000 Btu/hr.~~	~~—~~	~~8.2 EER 7.5 IPLV~~	~~ARI 360-93~~
~~Air conditioners, water or evaporatively cooled~~	~~≥ 135,000 Btu/hr.~~	~~—~~	~~9.6 EER 9.0 IPLV~~	~~ARI 360-93 STD 201 (96)~~
~~Heat pumps, air cooled, cooling mode~~	~~≥ 135,000 Btu/hr. and < 760,000 Btu/hr.~~	~~—~~	~~8.5 EER 7.5 IPLV~~	~~ARI 340-93~~
	~~≥ 760,000 Btu/hr.~~	~~—~~	~~8.2 EER 7.5 IPLV~~	~~ARI 340-93~~
~~Heat pumps, air cooled, heating mode~~	~~≥ 135,000 Btu/hr.~~	~~47°F 17°F~~	~~2.9 COP 2.0 COP~~	~~ARI 340-93~~
~~Condensing units, air cooled~~	~~≥ 135,000 Btu/hr.~~	~~—~~	~~9.9 EER 11.0 IPLV~~	~~ARI 365-94~~
~~Condensing units, water or evaporatively cooled~~	~~≥ 135,000 Btu/hr.~~	~~—~~	~~12.9 EER 12.9 IPLV~~	~~ARI 365-94 STD-201 (96)~~

WATER CHILLING PACKAGES, WATER AND AIR COOLED, ELECTRICALLY OPERATED				
Water cooled	< 150 tons	—	3.8 COP 3.9 IPLV	STD 201 (96) ARI 550-92 ARI 590-92
	≥ 150 < 300 tons	—	4.2 COP 4.5 IPLV	STD 201 (96) ARI 550-92 ARI 590-92
	≥ 300 tons	With CFC refrigerants with ozone depletion factors greater than those for R-22	5.2 COP 5.3 IPLV	STD 201 (96) ARI 550-92 ARI 590-92
Water cooled		All others	4.7 COP 4.8 IPLV	STD 201 (96) ARI 550-92 ARI 590-92
Air cooled	< 150 tons	With condenser	2.7 COP 2.8 IPLV	ARI 550-92 ARI 590-92
	≥ 150 tons	With condenser	2.5 COP 2.5 IPLV	ARI 550-92 ARI 590-92
	All sizes	Without condenser	3.1 COP 3.2 IPLV	ARI 550-92 ARI 590-92
BOILERS				
Gas fired	≥ 300,000 Btu/hr.	At both maximum and minimum rated capacity	80% combustion efficiency	ANSI Z21.13-91 HI Heating Boiler - Standard 89 ASME PTC 4.1-64 ANSI/UL 795-94
Oil fired	≥ 225,000 < 300,000 Btu/hr.		80% AFUE	10 C.F.R. Part 430, Appendix N
	≥ 300,000 Btu/hr.	At both maximum and minimum rated capacity	83% combustion efficiency	HI Heating Boiler - Standard 89 ASME PTC 4.1-64 ANSI/UL 726-90
Oil fired (residual)	≥ 300,000 Btu/hr.	At both maximum and minimum rated capacity	83% combustion efficiency	HI Heating Boiler - Standard 89 ASME PTC 4.1-64

TABLE 1-C—EFFICIENCY REQUIREMENTS FOR SPACE-CONDITIONING EQUIPMENT (Continued)

EQUIPMENT TYPE	SIZE CATEGORY	SUBCATEGORY OR RATING CONDITION	EFFICIENCY REQUIREMENT	WHEN TESTED WITH:
WARM-AIR FURNACES AND COMBINATION WARM-AIR FURNACES/AIR-CONDITIONING UNITS				
Gas-fired	≥ 225,000 Btu/hr.	At maximum rated capacity	80% thermal efficiency	ANSI Z21.47-93
		At maximum rated capacity	78% thermal efficiency	ANSI Z21.47-93
Oil-fired	≥ 225,000 Btu/hr.	At both maximum and minimum rated capacity	81% thermal efficiency	ANSI/UL 727-86
UNIT HEATERS				
Oil-fired	All sizes	At maximum rated capacity	81% thermal efficiency	UL 731-95
	All sizes	At maximum rated capacity	81% thermal efficiency	UL 731-95

(b) **Controls for Heat Pumps with Supplementary Electric Resistance Heaters.** Heat pumps with supplementary electric resistance heaters shall have controls:

1. That prevent supplementary heater operation when the heating load can be met by the heat pump alone; and

2. In which the cut-on temperature for compression heating is higher than the cut-on temperature for supplementary heating, and the cut-off temperature for compression heating is higher than the cut-off temperature for supplementary heating.

EXCEPTION to Section 112 (b): The controls may allow supplementary heater operation during:

(i) Defrost; and

B. Transient periods such as start-ups and following room thermostat setpoint advance, if the controls provide preferential rate control, intelligent recovery, staging, ramping or another control mechanism designed to preclude the unnecessary operation of supplementary heating.

SECTION 113 – MANDATORY REQUIREMENTS FOR SERVICE WATER-HEATING SYSTEMS AND EQUIPMENT

(a) **Certification by Manufacturers.** Any service water-heating system or equipment may be installed only if the manufacturer has certified that the system or equipment complies with all of the requirements of this subsection for that system or equipment.

1. **Temperature controls for service water-heating systems.** Service water-heating systems shall be equipped with automatic temperature controls capable of adjustment from the lowest to the highest acceptable temperature settings for the intended use as listed in Table 3, Chapter 45 of the 1995 ASHRAE Handbook, HVAC Applications Volume.

EXCEPTION to Section 113 (a) 1: Residential occupancies.

(d) **Installation**. Any service water-heating system or equipment may be installed only if the system or equipment complies with all of the applicable requirements of this subsection for the system or equipment.

A water heater may be installed in non-residential occupancies only if it is equipped with automatic temperature controls capable of adjustment from the lowest to the highest acceptable temperature settings for the intended use as listed in Table 3, Chapter 45 of the 1995 ASHRAE Handbook, HVAC Applications Volume.

1. **Outlet temperature controls**. On systems that have a total capacity greater than 167,000 Btu/hr., outlets that require higher than service water temperatures as listed in the 1995 ASHRAE Handbook, HVAC Applications Volume, shall have separate remote heaters, heat exchangers, or boosters to supply the outlet with the higher temperature.

2. **Pumps for circulating systems**. Circulating service water-heating systems shall have a control capable of automatically turning off the circulating pump when hot water is not required.

EXCEPTION to Section 113 (b) 2: Residential occupancies.

3. **Temperature controls for public lavatories**. The controls shall limit the outlet temperature to 110°F.

4. **Insulation**. Unfired service water heater storage tanks and backup tanks for solar water-heating systems shall have:

   A. External insulation with an installed R-value of at least R-12; or

   B. Internal and external insulation with a combined R-value of at least R-16; or

   C. The heat loss of the tank surface based on an 80°F water-air temperature difference shall be less than 6.5 Btu per hour per square foot.

5. **Service water heaters in state buildings**. Any new building constructed by the State shall derive its service water heating from a system that provides at least 60 percent of the energy needed for service water heating from site solar energy or recovered energy.

EXCEPTION to Section 113 (b) 5: Buildings for which the state architect determines that service water heating from site solar energy or recovered energy is economically or physically infeasible.

SECTION 114 – MANDATORY REQUIREMENTS FOR POOL AND SPA HEATING SYSTEMS AND EQUIPMENT

(a) **Certification by Manufacturers**. Any pool or spa heating system or equipment may be installed only if the manufacturer has certified that the system or equipment has all of the following:

~~1. **Efficiency**. A thermal efficiency for gas-fired systems of at least 78 percent, when tested according to ANSI Standard Z21.56-1994; and~~

~~2. **On-off switch**. A readily accessible on-off switch, mounted on the outside of the heater that allows shutting off the heater without adjusting the thermostat setting; and~~

~~3. **Instructions**. A permanent, easily readable, and weatherproof plate or card that gives instruction for the energy efficient operation of the pool or spa and for the proper care of pool or spa water when a cover is used; and~~

~~4.~~ **Electric resistance heating**. ~~No~~ Pool heaters shall not use electric resistance ~~heating; and~~ heating.

EXCEPTION 1 to Section 114 (a) 4: Listed package units with fully insulated enclosures, and with tight-fitting covers that are insulated to at least R-6.

EXCEPTION 2 to Section 114 (a) 4: Pools or spas deriving at least 60 percent of the annual heating energy from site solar energy or recovered energy.

~~5. **Pilot light**. No pilot light.~~

(b) **Installation**. Any pool or spa heating system or equipment shall be installed with all of the following:

1. **Piping**. At least 36 inches of pipe between the filter and the heater to allow for the future addition of solar heating equipment; and

2. **Covers**. A cover for outdoor pools or outdoor spas; and

EXCEPTION to Section 114 (b) 2: Pools or spas deriving at least 60 percent of the annual heating energy from site solar energy or recovered energy.

3. **Directional inlets and time switches for pools**. If the system or equipment is for a pool:

A. The pool shall have directional inlets that adequately mix the pool water; and

B. The circulation pump shall have a time switch that allows the pump to be set to run in the off-peak electric demand period, and for the minimum time necessary to maintain the water in the condition required by applicable public health standards.

EXCEPTION to Section 114 (b) 3 B: Where applicable public health standards require on-peak operation.

SECTION 115 (Reserved) ~~– NATURAL GAS CENTRAL FURNACES, COOKING EQUIPMENT, AND POOL AND SPA HEATERS: PILOT LIGHTS PROHIBITED~~

~~Any natural gas system or equipment listed below may be installed only if it does not have a continuously burning pilot light:~~

~~(a) Fan-type central furnaces.~~

~~(b) Household cooking appliances.~~

~~**EXCEPTION to Section 115 (b):** Household cooking appliances without an electrical supply voltage connection and in which each pilot consumes less than 150 Btu/hr.~~

~~(c) Pool heaters.~~

~~(d) Spa heaters.~~

SECTION 116 – MANDATORY REQUIREMENTS FOR FENESTRATION PRODUCTS AND EXTERIOR DOORS

No changes are proposed for Section 116

SECTION 117 – MANDATORY REQUIREMENTS FOR JOINTS AND OTHER OPENINGS

No changes are proposed for Section 117

SECTION 118 – MANDATORY REQUIREMENTS FOR INSULATION

No changes are proposed for Section 118

SECTION 119 – MANDATORY REQUIREMENTS FOR LIGHTING CONTROL DEVICES

Any automatic time switch control device, occupant-sensing device, automatic daylighting control device, lumen maintenance control device, or interior photocell sensor device may be installed only if ~~the manufacturer has certified to the commission, that~~ the device ~~complies with all of the applicable requirements of Subsections (a) through (g), and if the device is installed in compliance with Subsection (h)~~ this section.

~~(a) **All Devices: Instructions for Installation and Calibration.** The manufacturer shall provide step-by-step instructions for installation and start-up calibration of the device.~~

(b) **All Devices: Status Signal**. The device shall have an indicator that visibly or audibly informs the device operator that it is operating properly, or that it has failed or malfunctioned.

EXCEPTION to Section 119 (b): Photocell sensors or other devices where a status signal is infeasible because of inadequate power.

(c) **Automatic Time Switch Control Devices**. Automatic time switch control devices shall:

1. Be capable of programming different schedules for weekdays and weekends; and

2. Have program backup capabilities that prevent the loss of the device's program and time setting for at least 10 hours if power is interrupted.

(d) **Occupant sensing Devices**. Occupant sensing devices shall be capable of automatically turning off all the lights in an area no more than 30 minutes after the area has been vacated. In addition, ultrasonic and microwave devices shall have a built in mechanism that allows calibration of the sensitivity of the device to room movement in order to reduce the false sensing of occupants, and shall comply with either Item 1 or 2 below, as applicable:

1. If the device emits ultrasonic radiation as a signal for sensing occupants within an area, the device shall:

A. Have had a Radiation Safety Abbreviated Report submitted to the Center for Devices and Radiological Health, Federal Food and Drug Administration, under 21 Code of Federal Regulations, Section 1002.12 (1996), and a copy of the report shall have been submitted to the California Energy Commission; and

(i) Emit no audible sound; and

(ii) Not emit ultrasound in excess of the following decibel (dB) values, measured no more than five feet from the source, on axis:

MIDFREQUENCY OF SOUND PRESSURE THIRD-OCTAVE BAND (in kHz)	**MAXIMUM dB LEVEL WITHIN THIRD-OCTAVE BAND (in dB reference 20 micropascals)**
Less than 20	80
20 or more to less than 25	105
25 or more to less than 31.5	110
31.5 or more	115

2. If the device emits microwave radiation as a signal for sensing occupants within the area, the device shall:

A. Comply with all applicable provisions in 47 Code of Federal Regulations, Parts 2 and 15 (1996), and have an approved Federal Communications Commission

Identifier that appears on all units of the device and that has been submitted to the commission; and

B. Not emit radiation in excess of one milliwatt per square centimeter measured at no more than five centimeters from the emission surface of the device; and

C. Have permanently affixed to it installation instructions recommending that it be installed at least 12 inches from any area normally used by room occupants.

(e) **Automatic Daylighting Control Devices**. Automatic daylighting control devices shall:

1. Be capable of reducing the light output of the general lighting of the controlled area by at least one half while maintaining a uniform level of illuminance throughout the area; and

2. If the device is a dimmer, provide electrical outputs to lamps for reduced flicker operation through the dimming range and without causing premature lamp failure; and

3. If the device is a stepped dimming system, incorporate time delay circuits to prevent cycling of light level changes of less than three minutes; and

4. If the device uses step switching with separate on and off settings for the steps, have sufficient separation (deadband) of on and off points to prevent cycling; and

5. Have provided by the manufacturer step by step instructions for installation and start up calibration to design footcandle levels.

(f) **Lumen Maintenance Control Devices**. Lumen maintenance control devices shall:

1. Be capable of reducing the light output of the general lighting of the controlled area by at least 30 percent while maintaining a uniform illuminance throughout the area; and

2. Provide electrical outputs to lamps for reduced flicker operation through the dimming range and without causing premature lamp failure; and

3. Incorporate an alarm, either audible or visible, to announce when a specified setpoint has been reached; and

4. Have provided by the manufacturer step by step instructions for installation and start up calibration to design footcandle levels.

(g) **Interior Photocell Sensor Devices**. Interior photocell sensors shall not have a mechanical slide cover or other device that permits easy unauthorized disabling of the control, and shall not be incorporated into a wall mounted occupant sensing device.

~~(h) **Installation in Accordance with Manufacturer's Instructions.** If an automatic time switch control device, occupant sensing device, automatic daylighting control device, lumen maintenance control device, or interior photocell sensor device is installed, it shall comply with both Items 1 and 2 below.~~

~~1. The device shall be~~ is installed in accordance with the manufacturer's instructions; and

~~2. Automatic~~ if the device is a daylighting control ~~devices and~~ device or a lumen maintenance control ~~devices shall:~~ device, the device:

A. ~~Be~~ is installed so that automatic daylighting control devices control only luminaires within the daylit area; and

B. ~~Have~~ has photocell sensors that are either ceiling mounted or located so that they are accessible only to authorized personnel, and that are located so that they maintain adequate illumination in the area according to the designer's or manufacturer's instructions.